403

Service Manual

PIONEER

The Art of Entertainment

● KEH-6969

PIONEER
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ORDER NO.
CRT1443

CASSETTE CAR STEREO WITH FM/AM ELECTRONIC TUNER

KEH-6969 X1ML/ES X1ML/UC

KEH-4949 X1ML/ES X1ML/UC

Note:

- See the service manual CX-197 (CRT1328) for the cassette mechanism description.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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4037

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SAFETY INFORMATION (UC, US MODEL)

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

SPECIFICATIONS

General

Power source	14.4 V DC (10.8 – 15.6 V allowable)
Grounding system	Negative type
Max.current consumption	7.0 A
Dimensions (chassis)	178(W) x 50(H) x 140(D) mm
(nose)	104(W) x 48(H) x 34(D) mm
Shaft interval	147 mm
Weight	1.3kg

Amplifier

Continuous power output is 10 W per channel min. into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.

Maximum power output	25 W x 2/15 W x 4 (EIAJ)
Load impedance	4 Ω (4 – 8 Ω allowable)
Preout output level/Impedance	500 mV/1kΩ
Tone controls	
(bass)	±10 dB (100 Hz)
(treble)	±10 dB (10 kHz)
Loudness contour	+8 dB (100 Hz) (volume: – 30 dB)

Tape player

Tape	4.76cm/sec. (+0.14cm/sec. -0.05cm/sec.)
Tape speed	4.8 cm/sec.
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.13% (WRMS)
Frequency response	
(KEH-6969)	Metal: 40 – 17,000 Hz (±3 dB)
(KEH-4949)	40 – 14,000 Hz (±3 dB)
Stereo separation	45 dB
Signal-to-noise ratio	
(KEH-6969)	Metal: Dolby B NR IN: 63 dB (IEC-A network) Dolby NR OUT: 55 dB (IEC-A network)
(KEH-4949)	52 dB (IEC-A network)

FM tuner

Frequency range	87.5 – 108 MHz
Usable sensitivity	11 dBf (1.0 µV/75Ω mono, S/N: 30 dB)
50 dB quieting sensitivity	16 dBf (1.7 µV/75Ω, mono)
Signal-to-noise ratio	70 dB (IEC-A network)
Distortion	0.3 % (at 65 dBf, 1 kHz, stereo)
Frequency response	30 – 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)

AM tuner

Frequency range	
(9 kHz channel step)	531 – 1,602 kHz
(10 kHz channel step)	530 – 1,710 kHz
Usable sensitivity	18 µV(25 dB) (S/N: 20 dB)
Selectivity	50 dB (±9 kHz) 50 dB (±10 kHz)

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

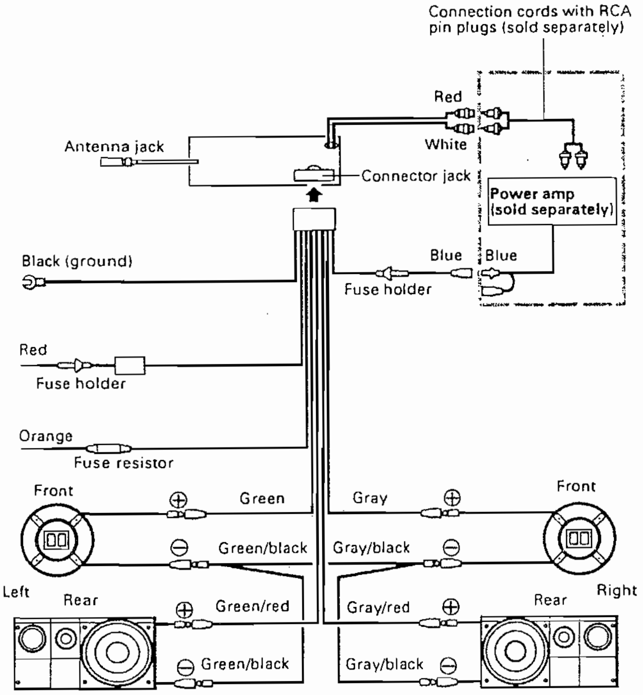
1. CONNECTIONS

Note:

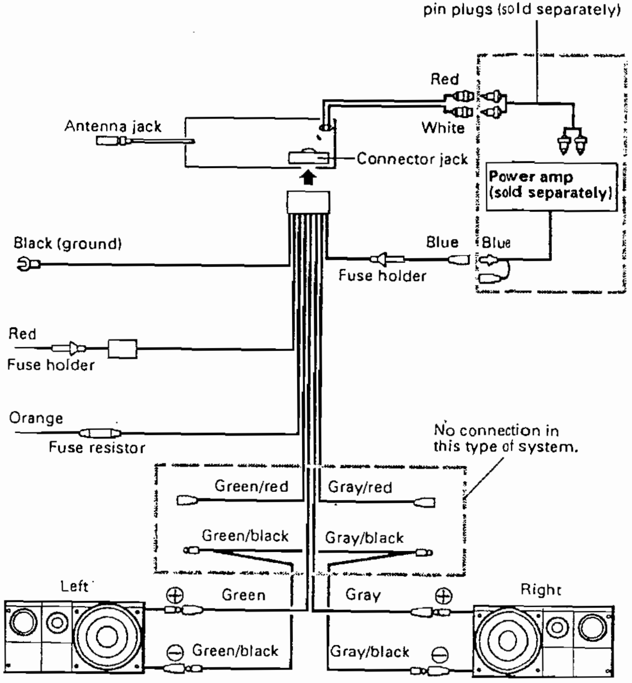
- To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.
- Replace fuses only with the types stipulated on the fuse holder.
- Be sure to properly connect the color coded leads. Failure to do so can cause malfunctions.
- Cover unused terminals with tape to prevent electrical shorts.
- Refer to the power amp owner's manual when connecting a power amp (sold separately) to the RCA pin jack.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.
- Speakers connected to this unit must be a high-power type possessing maximum input of at least 25 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.
- When the power amp. is being linked with this system, be sure not to connect the blue lead to the amp.'s power terminal. Likewise, when linking this system with the auto-antenna, do not connect to power terminal for the antenna. Such connection can make overcurrent causing malfunctions.

Black (ground)	To vehicle (metal) body.
Red	To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Orange	To terminal always supplied with power regardless of ignition switch position.
Blue	If this unit is combined with a power amp, connect its blue lead to the blue lead (system control terminal) of the power amp. If combined with an auto-antenna, connect its blue lead to the relay control terminal of the auto-antenna. (MAX. 300 mA, 12 V DC)

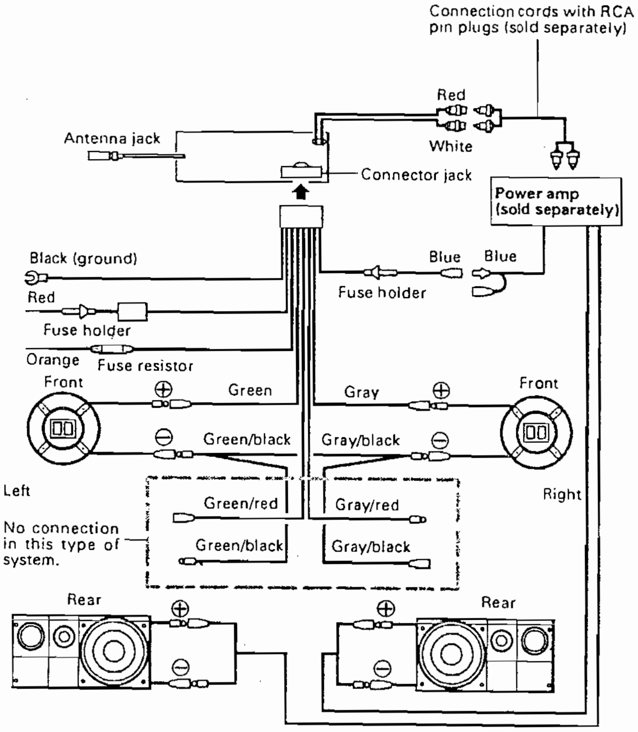
4-speaker system 1


Connection cords with RCA pin plugs (sold separately)
Red
White
Antenna jack
Connector jack
Power amp (sold separately)
Black (ground)
Blue
Blue
Fuse holder
Red
Fuse holder
Orange
Fuse resistor
Front
⊕
Green
Gray
⊕
Front
⊖
Green/black
Gray/black
⊖
Left
Rear
⊕
Green/red
Gray/red
⊕
Rear
Right
⊖
Green/black
Gray/black
⊖

2-speaker system

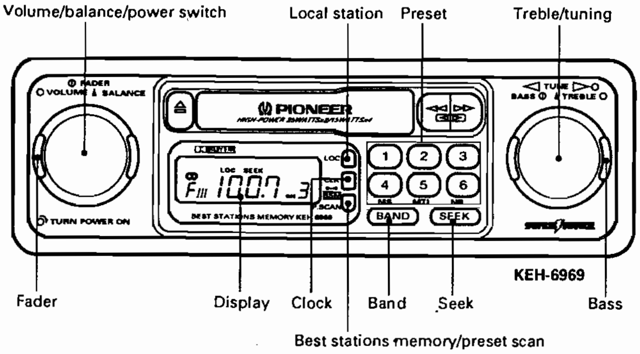

Connection cords with RCA pin plugs (sold separately)
Red
White
Antenna jack
Connector jack
Power amp (sold separately)
Black (ground)
Blue
Blue
Fuse holder
Red
Fuse holder
Orange
Fuse resistor
No connection in this type of system.
Green/red
Gray/red
Green/black
Gray/black
Left
⊕
Green
Gray
⊕
Right
⊖
Green/black
Gray/black
⊖

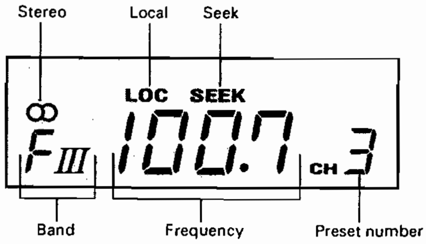
4-speaker system 2


Connection cords with RCA pin plugs (sold separately)
Red
White
Antenna jack
Connector jack
Power amp (sold separately)
Black (ground)
Blue
Blue
Fuse holder
Red
Fuse holder
Orange
Fuse resistor
Front
⊕
Green
Gray
⊕
Front
⊖
Green/black
Gray/black
⊖
Left
Right
No connection in this type of system.
Green/red
Gray/red
Green/black
Gray/black
Rear
⊕
⊕
Rear
⊖
⊖

Note:
Connect to the front speakers with the green and gray leads. If you connect with the green/red and gray/red leads, this unit's fader control will not operate.

2. USING THE RADIO





- **Before attempting operation...**
- Set the fader control to the center position.

1. Turning the power switch to the right causes power to switch ON and the current frequency to appear on the display.

- Since the set is designed preferentially for tape play, eject a cassette tape, if mounted, before operating the radio.

2. Press the band switch to select the band.
3. Press the seek button and the seek tuning indicator will be displayed.
4. Turn the tuning knob to the left or right to tune in the desired frequency. (Turning to the right will increase the frequency.)
5. Adjust the volume and balance.
   To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
6. Adjust the tone.
   To adjust the treble, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.

- **To enter a frequency into the preset memory...**

7. Hold down one of the preset buttons (1-6) for approximately two seconds. The frequency is stored in memory (assigned to the preset button pressed) once the preset number stops flashing on the display.
   Six FM1 frequencies, six FM2 frequencies, six FM3 frequencies and six AM frequencies can be entered.

- **Auto-Loudness**

When playing back a tape or listening to the radio at low volume, the low tone is automatically emphasized.

- **Clock Switch**

Each press causes the display to switch between clock and frequency.

- **Best Stations Memory Button**

Automatically tunes strong frequencies and assigns them to preset buttons 1 through 6 for one-touch automatic tuning. The best stations memory function is activated by pressing this button for approximately 2 seconds. The best stations memory function is indicated by – – – flashing on the display, and this function can be canceled by pressing the band switch. The frequency display returns once the best stations memory function is complete. The frequency displayed at this time is of the strongest station assigned to preset button 1 by the best stations memory function.

- 6 best (strongest) frequencies are memorized in the 6 preset buttons in the order of their strength, the strongest one being assigned to preset button 1.
- The frequencies previously assigned to the preset buttons are retained when 6 frequencies cannot be located.
- The best stations memory is in operation while – – – is flashing on the display.

- **Local Station Switch**

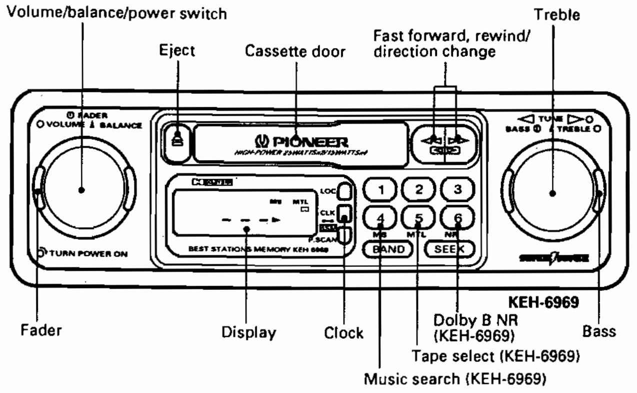
Pressing this switch increases the seek threshold level so that only relatively strong stations can be tuned in (local indicator will illuminate on the display). Local seek threshold level can be selected among four levels for FM and two levels for AM.
Holding this switch down for approximately 2 seconds and then turning the tuning knob to the right changes the display from L-1, L-2, L-3 to L-4. Turning the tuning knob to the left changes the display from L-4, L-3, L-2 to L-1. (L-1 and L-2 for AM.) The bigger the number, the higher the seek threshold becomes and only relatively strong stations can be tuned in.

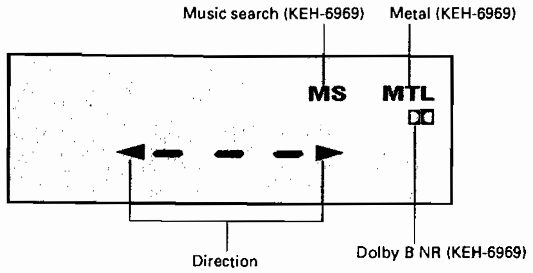
- **Fader Control**

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control to the left decreases the volume of the rear speakers, while turning it to the right decreases the volume of the front speakers. With 2-speaker systems, set this control to the center position.

Important
The output of power amp. (sold separately) is not affected by fader control when this unit is linked with the power amp.

3. USING THE TAPE DECK





- **Before attempting operation...**
- Set the fader control to the center position.

1. Turning the power switch to the right causes power to switch ON.
2. Loading a cassette tape into the load slot causes playback to begin automatically.
3. Adjust the volume and balance.
   To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
4. Adjust the tone.
   To adjust the treble, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
5. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, press the eject button.

- A loose or warped label on a cassette tape may interface with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.
- Loose tapes should be rewound with the aid of a pencil and unevenly wound tapes rewound with the use of the fast forward function.
- Be sure to eject the tape when the vehicle's ignition is turned OFF. Leaving the tape in the unit can deform the pinch roller causing wow and flutter during tape playback.

- **Fast Forward/Rewind**

Since the transport can be in either direction, both the left and right high-speed tape transport buttons can be regarded as fast forward/ rewind buttons.

For fast forward, press the high-speed tape transport button that corresponds to the direction that is shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button that is opposite that of the direction shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button.

- **Direction Change**

Push the fast forward and rewind buttons together to switch from one side of the tape to the other (from Side A to Side B or vice versa).

- **Tape Select Switch (KEH-6969)**

This switch is used to switch to the proper mode for the tape being used and should be depressed when using chrome or metal tapes.

- **Dolby B NR Switch (KEH-6969)**

Press when playing a tape recorded with Dolby NR.

Music Search (KEH-6969)

- **Returning to the beginning of selection A**

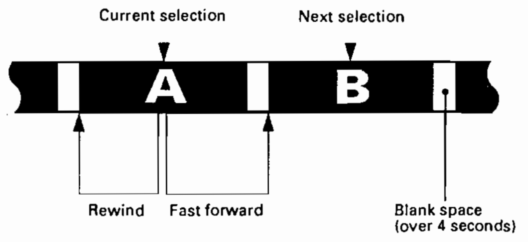
Press the music search button and then the high-speed tape transport button for the direction opposite that is shown by the direction indicator. Playback will automatically start from the beginning of selection A.

- **Moving from selection A to selection B**

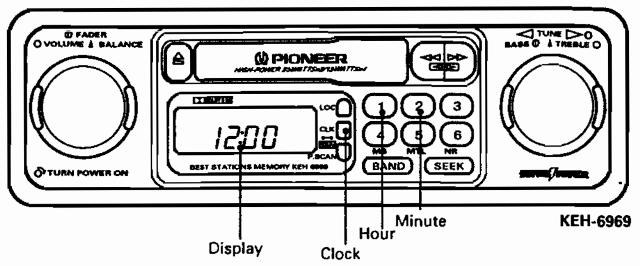
Press the music search button and then the high-speed tape transport button that corresponds to the direction shown by the direction indicator. Playback will automatically start from the beginning of selection B.

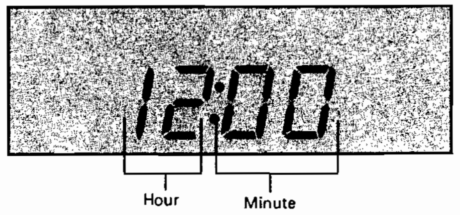
To enable regular fast forward/rewind operations, press the music search button again to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections less than 4 seconds → the blank portion cannot be detected by the unit.
- Pauses in recorded conversations longer than 4 seconds → the unit reads these as blanks between selections.
- Portions recorded at very low volume for more than 4 seconds → the unit reads these as blanks between selections.



4. SETTING THE TIME





1. Press the clock switch to switch to the time display.
2. Each press of the hour control button while holding down the clock switch advances hour display by one hour. Each press of the minute control button advances minute display one minute. Holding down either of the hour/minute control buttons advances the respective hour/minute display at high speed.

5. BLOCK DIAGRAM

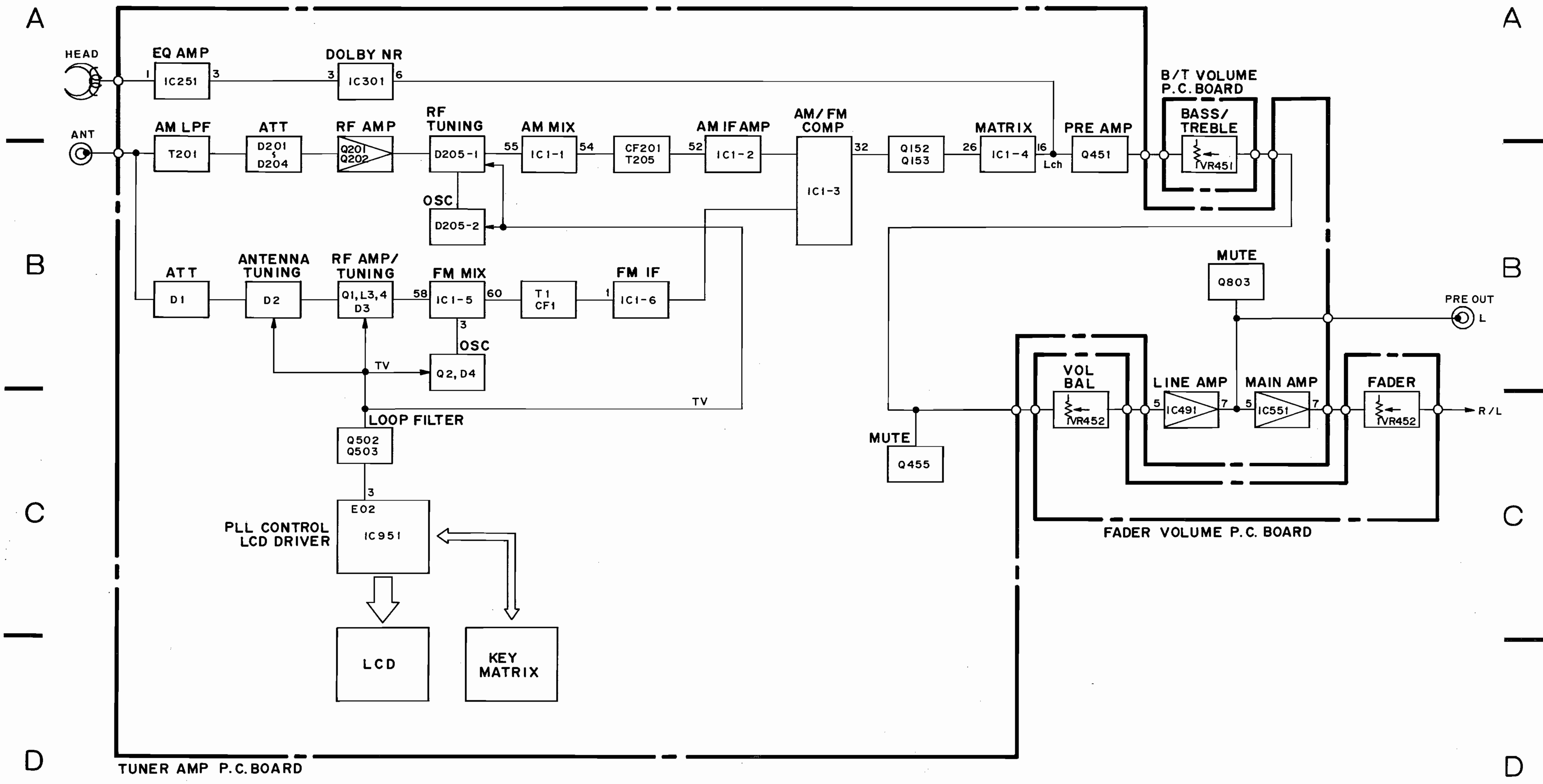

A
B
C
D
HEAD
ANT
EQ AMP
1
IC251
3
DOLBY NR
3
IC301
6
AM LPF
T201
ATT
D201 ~ D204
RF AMP
Q201 Q202
RF TUNING
D205-1
OSC
D205-2
55
AM MIX
IC1-1
54
CF201 T205
52
AM IF AMP
IC1-2
AM/FM COMP
IC1-3
32
Q152 Q153
26
MATRIX
IC1-4
16
Lch
PRE AMP
Q451
B/T VOLUME P.C. BOARD
BASS/ TREBLE
VR451
ATT
D1
ANTENNA TUNING
D2
RF AMP/ TUNING
Q1, L3, 4 D3
58
FM MIX
IC1-5
60
T1 CF1
1
FM IF
IC1-6
3
OSC
Q2, D4
TV
TV
LOOP FILTER
Q502 Q503
3
E02
PLL CONTROL LCD DRIVER
IC951
LCD
KEY MATRIX
MUTE
Q803
PRE OUT
L
MUTE
Q455
VOL BAL
VR452
LINE AMP
5
IC491
7
MAIN AMP
5
IC551
7
FADER
VR452
R/L
FADER VOLUME P.C. BOARD
TUNER AMP P.C. BOARD

Fig. 1

6. DISASSEMBLY

- Removing the Case

1. Remove the two screws.
2. Insert and turn a screwdriver at locations indicated by arrows A to remove the case.
3. Raise the case to remove.

- Removing the Grille Assy

1. Press the tabs at locations indicated by arrows B. and then pull grille assy.

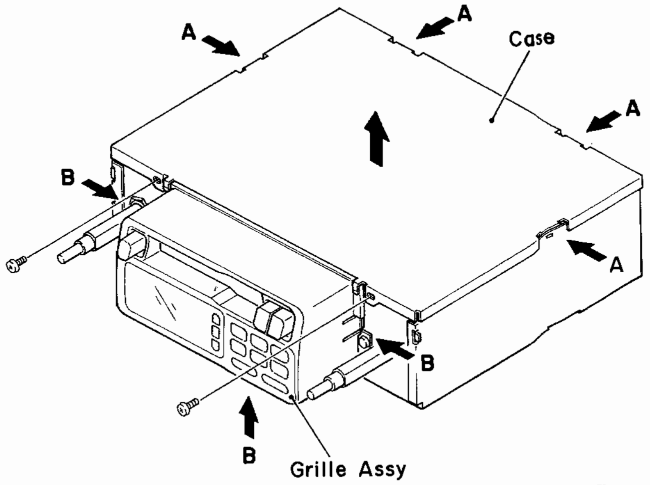

A
A
Case
A
A
B
B
B
Grille Assy

Fig. 2

- Removing the Cassette Mechanism Assy Section

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism assy section.

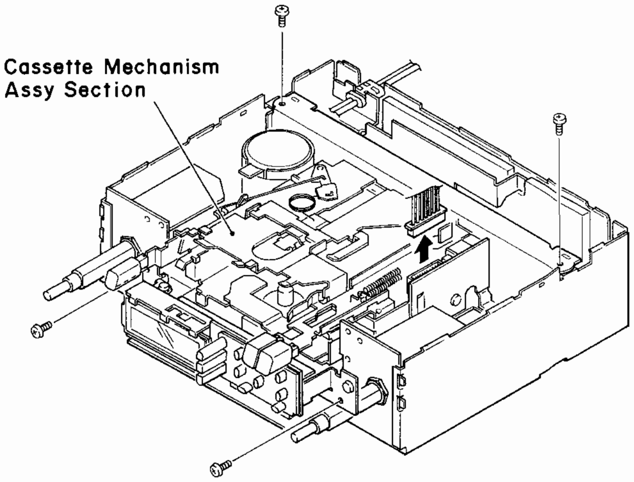

Cassette Mechanism
Assy Section

Fig. 3

- Removing the Tuner Amp P.C. Board

1. Remove the five screws and two nuts.
2. Unbend the tab indicated by arrow until straight.
3. Raise up on tuner amp P.C. board to remove it from the chassis.

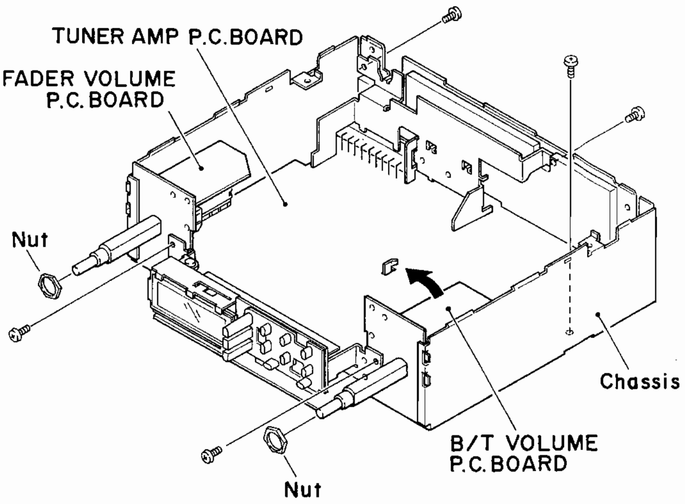

TUNER AMP P.C.BOARD
FADER VOLUME
P.C. BOARD
Nut
Chassis
B/T VOLUME
P.C. BOARD
Nut

Fig. 4

7. ADJUSTMENT

NOTICE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

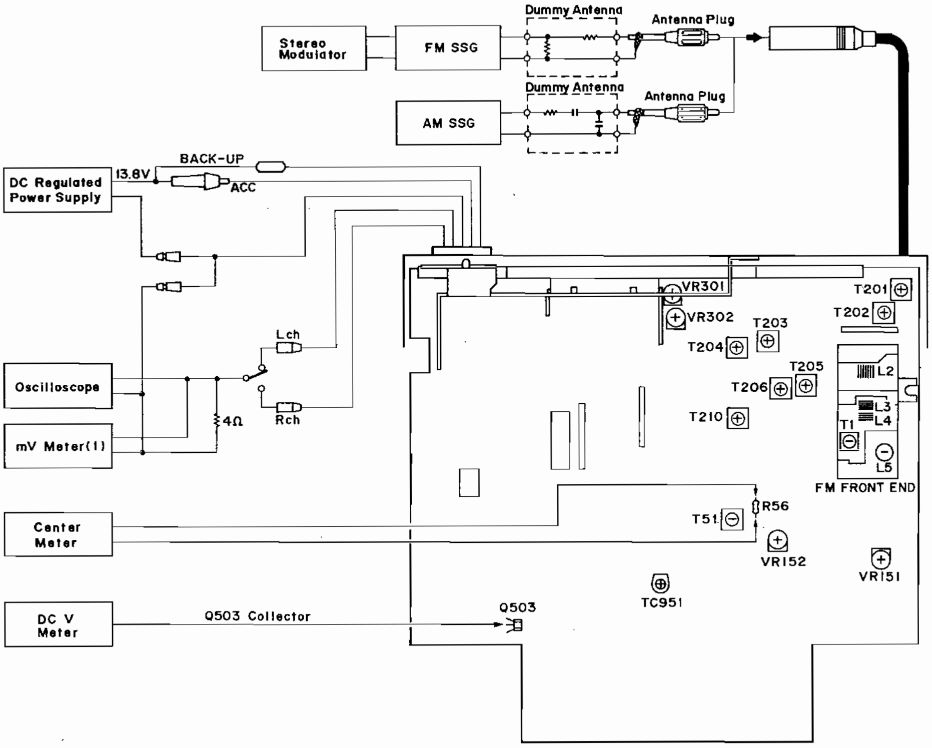

Dummy Antenna
Antenna Plug
Stereo Modulator
FM SSG
Dummy Antenna
Antenna Plug
AM SSG
BACK-UP
DC Regulated Power Supply
13.8V
ACC
Lch
Oscilloscope
4Ω
Rch
mV Meter(1)
Center Meter
DC V Meter
Q503 Collector
Q503
VR301
VR302
T201
T202
T203
T204
T205
T206
T210
L2
L3
L4
T1
L5
FM FRONT END
R56
T51
VR152
VR151
TC951

Fig. 5

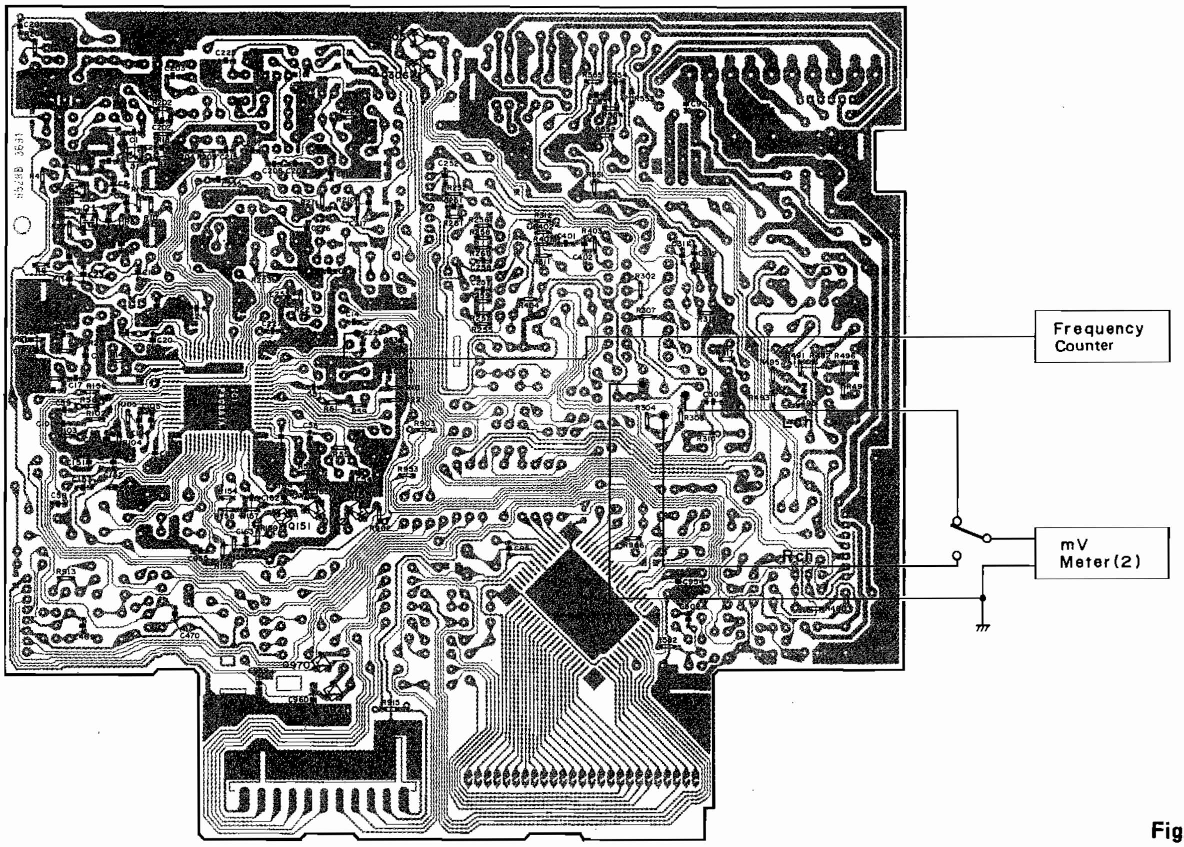

Frequency Counter
mV Meter(2)
Lch
Rch

Fig. 6

DOLBY NR ADJUSTMENT

No.	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	MCT-150 (400Hz, 200nwb/m)	VR301 (L ch) VR302 (R ch)	mV Meter(2): -10dBs±1dB (DOLBY NR Switch: OFF)

FM ADJUSTMENT

*1 Stereo MOD.: Pilot=10%
*2 Stereo MOD.: 1kHz, L+R=90%, Pilot=10%

	No.	FM SSG(400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dBf)			
Tuning Volt	1	–	–	107.9 (UC) 108.0 (ES)	L5	DC V Meter: 7.0V
Tracking	1	98.1	15	98.1	L2, L4	mV Meter(1): Maximum
	2	98.1	15	98.1	T1	mV Meter(1): Maximum
IF	1	98.1 Unmodulated	65	98.1	T51	Center Meter: 0
Pilot Cancel	1	98.1 *1	65	98.1	VR151	mV Meter(1): Minimum (MPX Filter: OFF)
ARC	1	98.1 *2	40	98.1	VR152	mV Meter(1): Separation 5dB

AM ADJUSTMENT

*3: ES model when tuning step at 9kHz.

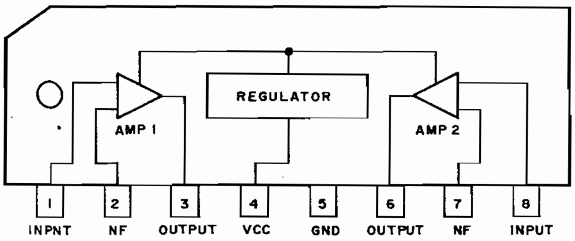
	No.	AM SSG (400Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dBμV)			
Tuning Volt	1	–	–	530 (531) *3	T210	DC V Meter: 1.0V
Tracking	1	1,000 (999) *3	20	1,000 (999) *3	T203, 204, 205, 206	mV Meter(1): Maximum

CLOCK ADJUSTMENT

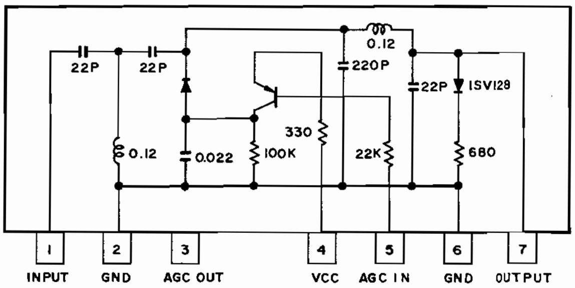
	No.	Band	Displayed Frequency (kHz)	Adjusting Point	Adjustment Method
	1	AM	1,710 (UC)	TC951	Frequency Counter: 2160kHz±40Hz
			1,602 (ES)	TC951	Frequency Counter: 2052kHz±40Hz

• ICs

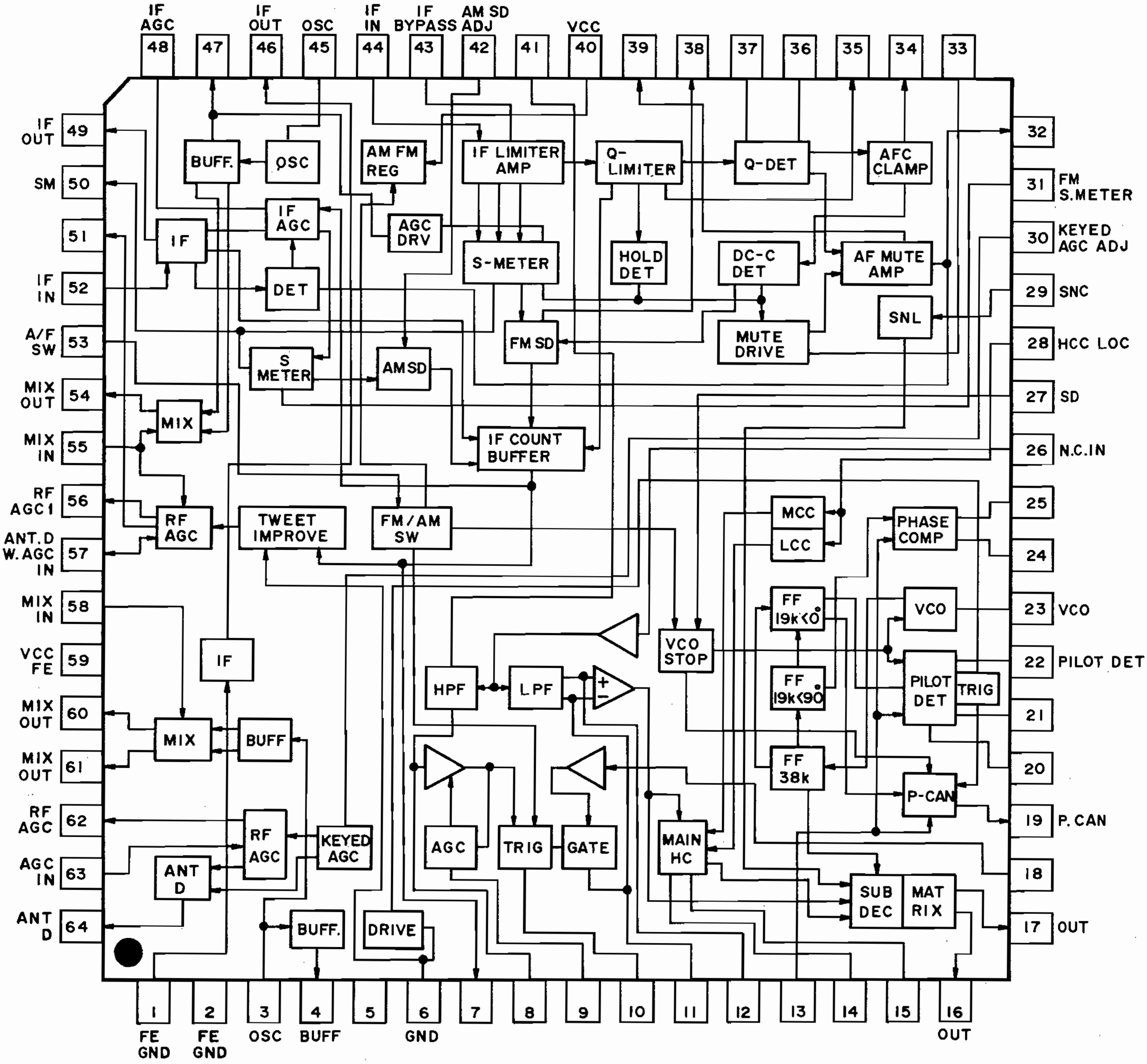
LA3161P


REGULATOR
AMP 1
AMP 2
1
2
3
4
5
6
7
8
INPNT
NF
OUTPUT
VCC
GND
OUTPUT
NF
INPUT

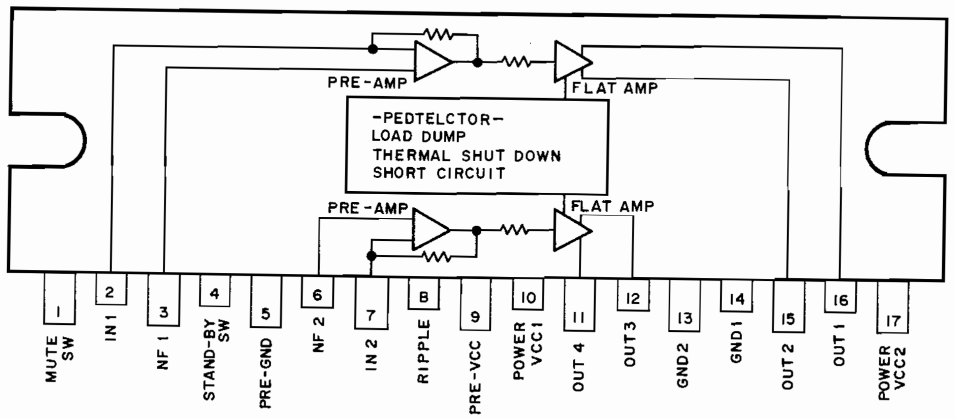
CWW1116


22P
22P
0.12
220P
22P
1SV128
0.12
0.022
100K
330
22K
680
1
2
3
4
5
6
7
INPUT
GND
AGC OUT
VCC
AGC IN
GND
OUTPUT

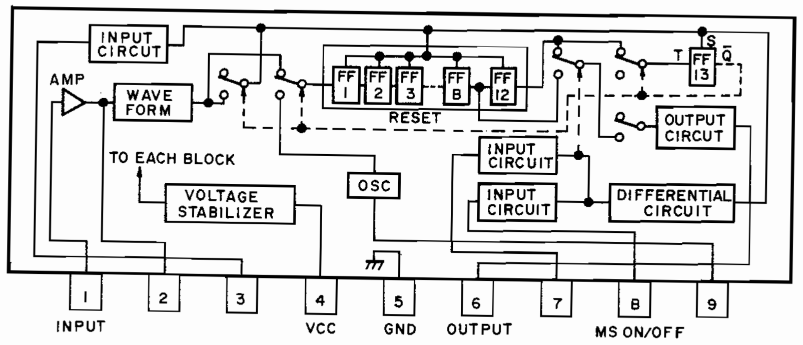
LA1883M


IF AGC
IF OUT
OSC
IF IN
IF BYPASS
AM SD ADJ
VCC
48
47
46
45
44
43
42
41
40
39
38
37
36
35
34
33
IF OUT 49
SM 50
51
IF IN 52
A/F SW 53
MIX OUT 54
MIX IN 55
RF AGC1 56
ANT.D W.AGC IN 57
MIX IN 58
VCC FE 59
MIX OUT 60
MIX OUT 61
RF AGC 62
AGC IN 63
ANT D 64
32
31 FM S.METER
30 KEYED AGC ADJ
29 SNC
28 HCC LOC
27 SD
26 N.C.IN
25
24
23 VCO
22 PILOT DET
21
20
19 P. CAN
18
17 OUT
1 FE GND
2 FE GND
3 OSC
4 BUFF
5
6 GND
7
8
9
10
11
12
13
14
15
16 OUT
BUFF.
OSC
AM FM REG
IF LIMITER AMP
Q-LIMITER
Q-DET
AFC CLAMP
IF
IF AGC
AGC DRV
S-METER
HOLD DET
DC-C DET
AF MUTE AMP
DET
FM SD
MUTE DRIVE
SNL
S METER
AMSD
MIX
IF COUNT BUFFER
RF AGC
TWEET IMPROVE
FM/AM SW
MCC
LCC
PHASE COMP
FF 19k<0°
VCO
VCO STOP
IF
HPF
LPF
FF 19k<90°
PILOT DET
TRIG
MIX
BUFF
FF 38k
P-CAN
RF AGC
KEYED AGC
AGC
TRIG
GATE
MAIN HC
ANT D
SUB DEC
MAT RIX
BUFF.
DRIVE

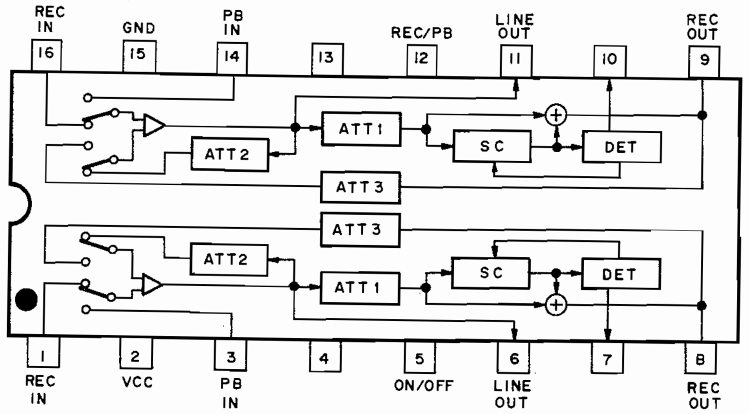
TA8215H


PRE-AMP
FLAT AMP
-PEDTELCTOR-
LOAD DUMP
THERMAL SHUT DOWN
SHORT CIRCUIT
PRE-AMP
FLAT AMP
1 MUTE SW
2 IN 1
3 NF 1
4 STAND-BY SW
5 PRE-GND
6 NF 2
7 IN 2
8 RIPPLE
9 PRE-VCC
10 POWER VCC1
11 OUT 4
12 OUT 3
13 GND2
14 GND1
15 OUT 2
16 OUT 1
17 POWER VCC2

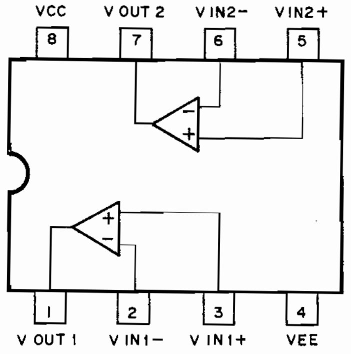
AN6263N


INPUT CIRCUT
AMP
WAVE FORM
FF 1
FF 2
FF 3
FF 8
FF 12
RESET
T
S
FF 13
Q̄
OUTPUT CIRCUT
TO EACH BLOCK
INPUT CIRCUIT
OSC
VOLTAGE STABILIZER
INPUT CIRCUIT
DIFFERENTIAL CIRCUIT
1
2
3
4
5
6
7
8
9
INPUT
VCC
GND
OUTPUT
MS ON/OFF

CXA1102P


REC IN
GND
PB IN
REC/PB
LINE OUT
REC OUT
16
15
14
13
12
11
10
9
ATT 1
ATT 2
ATT 3
SC
DET
ATT 3
ATT 2
ATT 1
SC
DET
1
2
3
4
5
6
7
8
REC IN
VCC
PB IN
ON/OFF
LINE OUT
REC OUT

LA6458M


VCC
V OUT 2
V IN2−
V IN2+
8
7
6
5
1
2
3
4
V OUT 1
V IN1−
V IN1+
VEE

- **Pin Function (PD4275)**

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC		C	Not used
2 3	EO1 EO2	Output	C (3)	PLL error output pins
4 8	VDD1 VDD2			Device power supply pin
5	AMVCO	Input		AM local oscillator signal input pin
6	FMVCO	Input		FM local oscillator signal input pin
7	CE	Input		Chip enable input pin
9	FM/$\overline{\text{AM}}$	Output	C	FM/AM band select pin "H": FM "L": AM
10	LW/$\overline{\text{MW}}$	Output	C	Loop filter switching output pin "H": LW
11	MUTE	Output	C	Mute output pin "H": ON
12	DK	Input		SK signal input pin
13	SK	Input		DK signal input pin
14	ST	Input		Stereo broadcast detection signal input pin "L": Stereo indicator is displayed
15	TAPE	Input		Tape power ON/OFF input pin "H": ON
16	AMIF	Input		AM IF signal input pin
17	SD	Input		FM SD input "H": During broadcast reception
18	F/R	Input		Tape motion signal input pin "H": Forward
19	$\overline{\text{LOUD}}$	Input		Loudness ON/OFF signal input pin "L": ON
20	NR	Output	C	Dolby NR ON/OFF output pin "H": ON
21	$\overline{\text{MTL}}$	Output	C	Tape METAL ON/OFF output pin "L": ON
22	$\overline{\text{MSOUT}}$	Output	C	Tape MS ON/OFF output pin "L": ON
23	SEEK	Output	C	"H" level: SEEK, BSM, BSA and PSCAN
24 25	XO XI	Output Input	C	Quartz oscillator terminal
26	GND			GND terminal
27	PEE	Output	C	Alarm output pin
28	LOC1	Output	C	Halt sensitivity switching pin "L": DX SEEK (P. SCAN) "H": LOC SEEK
29	DKOUT	Output	C	Control by DK (terminal #12) input signal "H": DK input signal is detected as 125Hz
30	NC			Not used

- **Pin Function (PD4275)**

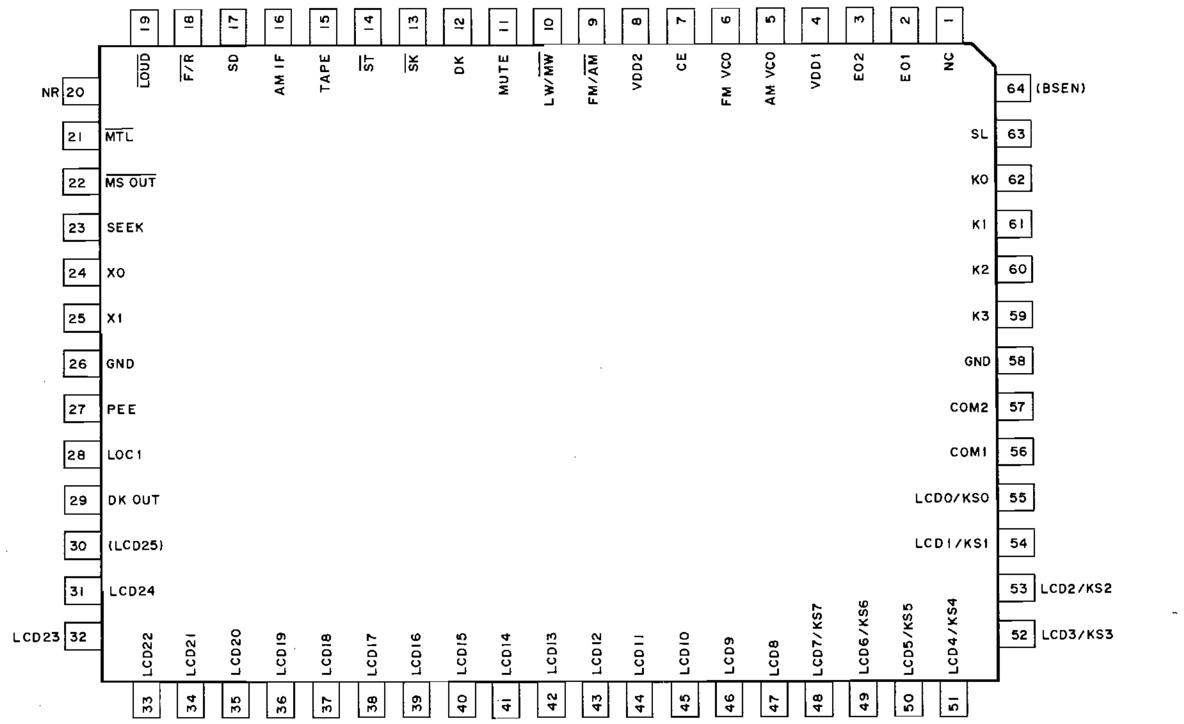
Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC		C	Not used
2 3	EO1 EO2	Output	C (3)	PLL error output pins
4 8	VDD1 VDD2			Device power supply pin
5	AMVCO	Input		AM local oscillator signal input pin
6	FMVCO	Input		FM local oscillator signal input pin
7	CE	Input		Chip enable input pin
9	FM/$\overline{\text{AM}}$	Output	C	FM/AM band select pin "H": FM "L": AM
10	LW/$\overline{\text{MW}}$	Output	C	Loop filter switching output pin "H": LW
11	MUTE	Output	C	Mute output pin "H": ON
12	DK	Input		SK signal input pin
13	SK	Input		DK signal input pin
14	ST	Input		Stereo broadcast detection signal input pin "L": Stereo indicator is displayed
15	TAPE	Input		Tape power ON/OFF input pin "H": ON
16	AMIF	Input		AM IF signal input pin
17	SD	Input		FM SD input "H": During broadcast reception
18	F/R	Input		Tape motion signal input pin "H": Forward
19	$\overline{\text{LOUD}}$	Input		Loudness ON/OFF signal input pin "L": ON
20	NR	Output	C	Dolby NR ON/OFF output pin "H": ON
21	$\overline{\text{MTL}}$	Output	C	Tape METAL ON/OFF output pin "L": ON
22	$\overline{\text{MSOUT}}$	Output	C	Tape MS ON/OFF output pin "L": ON
23	SEEK	Output	C	"H" level: SEEK, BSM, BSA and PSCAN
24 25	XO XI	Output Input	C	Quartz oscillator terminal
26	GND			GND terminal
27	PEE	Output	C	Alarm output pin
28	LOC1	Output	C	Halt sensitivity switching pin "L": DX SEEK (P. SCAN) "H": LOC SEEK
29	DKOUT	Output	C	Control by DK (terminal #12) input signal "H": DK input signal is detected as 125Hz
30	NC			Not used

Pin No.	Pin Name	I/O	Output Format	Function and Operation
31 I 55	LCD24 I LCD0	Output	C	Segment signal output pins to LCD
48 I 55	KS7 I KS0	Output	C	Key matrix strobe output pins
56 57	COM1 COM2	Output	C	Common signal output pins to LCD
59 I 62	K3 I K0	Input		Key matrix return input pins
63	SL	Input		AM station level anarog input pin
64	NC		C	Not used

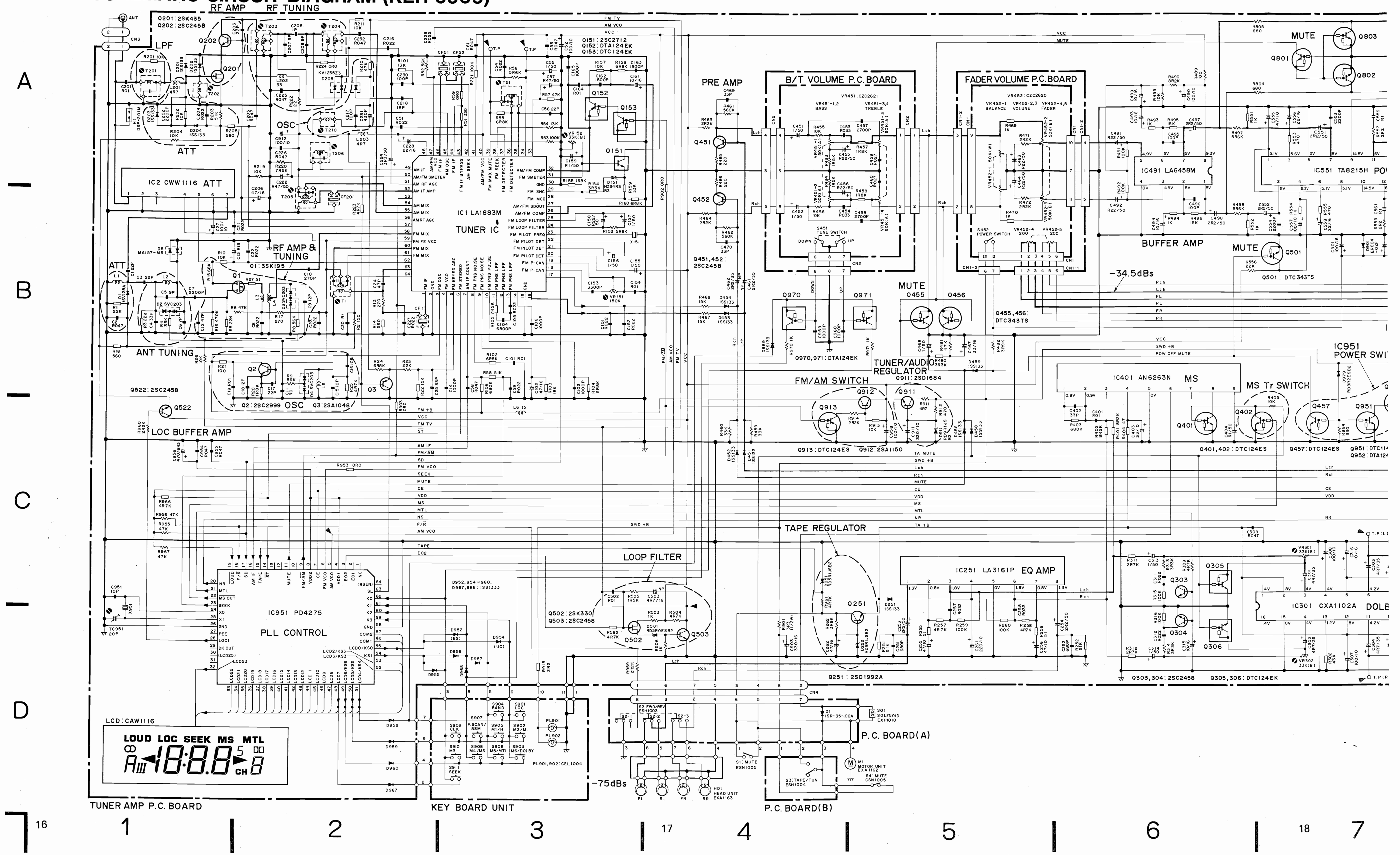
Output format	Meaning
C	C-MOS
C (3)	C-MOS (3 State)

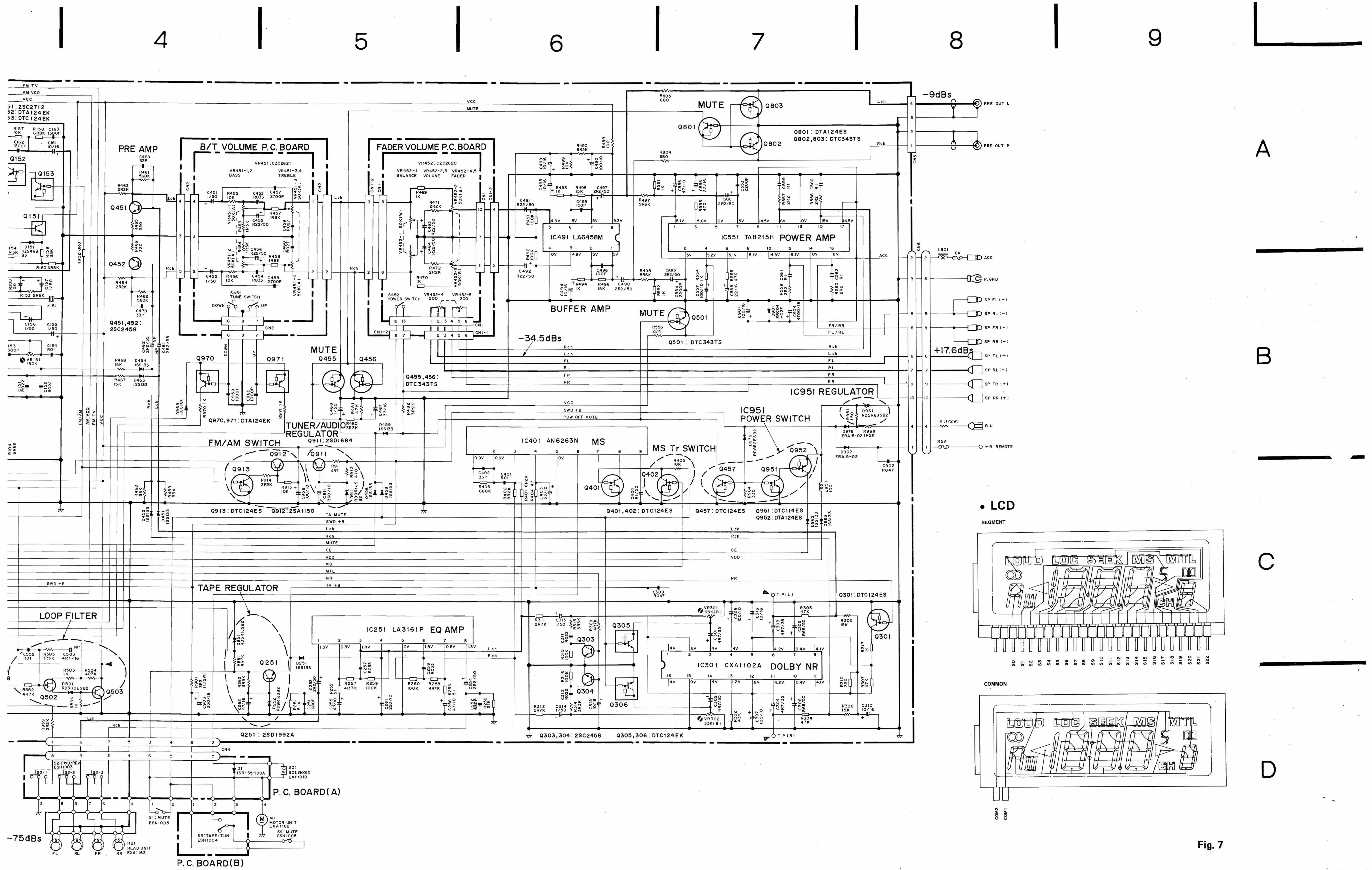
*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*PD4275


1 NC
2 EO1
3 EO2
4 VDD1
5 AM VCO
6 FM VCO
7 CE
8 VDD2
9 FM/AM
10 LW/MW
11 MUTE
12 DK
13 SK
14 ST
15 TAPE
16 AM IF
17 SD
18 F/R
19 LOUD
20 NR
21 MTL
22 MS OUT
23 SEEK
24 XO
25 X1
26 GND
27 PEE
28 LOC1
29 DK OUT
30 (LCD25)
31 LCD24
32 LCD23
33 LCD22
34 LCD21
35 LCD20
36 LCD19
37 LCD18
38 LCD17
39 LCD16
40 LCD15
41 LCD14
42 LCD13
43 LCD12
44 LCD11
45 LCD10
46 LCD9
47 LCD8
48 LCD7/KS7
49 LCD6/KS6
50 LCD5/KS5
51 LCD4/KS4
52 LCD3/KS3
53 LCD2/KS2
54 LCD1/KS1
55 LCD0/KS0
56 COM1
57 COM2
58 GND
59 K3
60 K2
61 K1
62 KO
63 SL
64 (BSEN)

8. SCHEMATIC CIRCUIT DIAGRAM (KEH-6969)

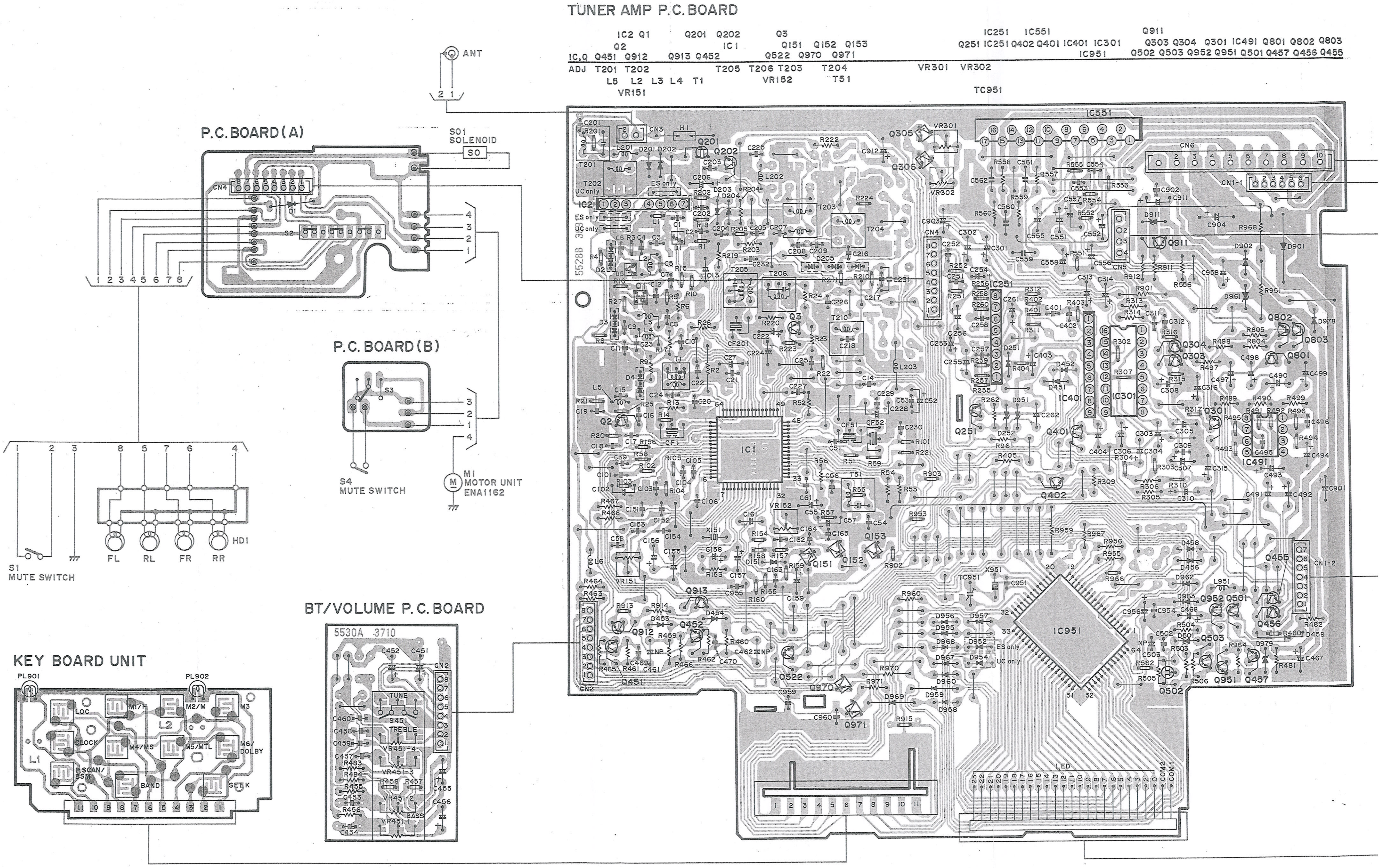

1
2
3
4
5
6
7
A
B
C
D
RF AMP
RF TUNING
Q201 : 2SK435
Q202 : 2SC2458
ANT
CN3
LPF
ATT
OSC
IC2 CWW1116 ATT
RF AMP & TUNING
Q1 : 3SK195
ANT TUNING
Q2 : 2SC2999
OSC
Q3 : 2SA1048
Q522 : 2SC2458
LOC BUFFER AMP
IC1 LA1883M
TUNER IC
Q151 : 2SC2712
Q152 : DTA124EK
Q153 : DTC124EK
PRE AMP
Q451,452 : 2SC2458
B/T VOLUME P.C.BOARD
VR451 : CZC2621
VR451-1,2 BASS
VR451-3,4 TREBLE
S451 TUNE SWITCH
FADER VOLUME P.C.BOARD
VR452 : CZC2620
VR452-1 BALANCE
VR452-2,3 VOLUME
VR452-4,5 FADER
S452 POWER SWITCH
IC491 LA6458M
BUFFER AMP
MUTE
Q801
Q803
Q802
IC551 TA8215H
Q501 : DTC343TS
-34.5dBs
Q970
Q971
Q970,971 : DTA124EK
MUTE
Q455
Q456
Q455,456 : DTC343TS
TUNER/AUDIO REGULATOR
Q911 : 2SD1684
FM/AM SWITCH
Q913 : DTC124ES
Q912 : 2SA1150
IC401 AN6263N MS
MS Tr SWITCH
Q401,402 : DTC124ES
Q457 : DTC124ES
IC951 POWER SWI
Q951 : DTC11
Q952 : DTA12
IC951 PD4275
PLL CONTROL
LOOP FILTER
Q502 : 2SK330
Q503 : 2SC2458
D952,954~960, D967,968 : 1SS133
TAPE REGULATOR
Q251 : 2SD1992A
IC251 LA3161P EQ AMP
IC301 CXA1102A DOLB
Q303,304 : 2SC2458
Q305,306 : DTC124EK
LCD : CAW1116
LOUD LOC SEEK MS MTL
S904 BAND
S901 LOC
S909 CLK
S907 P.SCAN/BSM
S905 M1/H
S902 M2/M
S910 M3
S908 M4/MS
S906 M5/MTL
S903 M6/DOLBY
S911 SEEK
PL901,902 : CEL1004
-75dBs
S2 : FWD/REV ESH1003
HD1 HEAD UNIT EXA1163
S1 : MUTE ESN1005
S3 : TAPE/TUN ESH1004
S01 SOLENOID EXP1010
M1 MOTOR UNIT EXA1162
S4 : MUTE CSN1005
D1 ISR-35-100A
P.C. BOARD(A)
P.C. BOARD(B)
TUNER AMP P.C. BOARD
KEY BOARD UNIT
1
2
3
4
5
6
7



4
5
6
7
8
9
A
B
C
D
PRE AMP
B/T VOLUME P.C. BOARD
FADER VOLUME P.C. BOARD
VR451 : CZC2621
VR452 : CZC2620
VR451-1,2 BASS
VR451-3,4 TREBLE
VR452-1 BALANCE
VR452-2,3 VOLUME
VR452-4,5 FADER
S451 TUNE SWITCH
S452 POWER SWITCH
DOWN
UP
Q451,452 : 2SC2458
Q970,971 : DTA124EK
MUTE
Q455,456 : DTC343TS
TUNER/AUDIO REGULATOR
Q911 : 2SD1684
FM/AM SWITCH
Q913 : DTC124ES
Q912 : 2SA1150
IC491 LA6458M
BUFFER AMP
IC551 TA8215H POWER AMP
Q501 : DTC343TS
Q801 : DTA124ES
Q802,803 : DTC343TS
-9dBs
PRE OUT L
PRE OUT R
-34.5dBs
+17.6dBs
ACC
P.GND
SP FL (−)
SP RL (−)
SP FR (−)
SP RR (−)
SP FL (+)
SP RL (+)
SP FR (+)
SP RR (+)
B.U
+B REMOTE
IC951 REGULATOR
IC951 POWER SWITCH
IC401 AN6263N MS
MS Tr SWITCH
Q401,402 : DTC124ES
Q457 : DTC124ES
Q951 : DTC114ES
Q952 : DTA124ES
TAPE REGULATOR
LOOP FILTER
IC251 LA3161P EQ AMP
Q251 : 2SD1992A
IC301 CXA1102A DOLBY NR
Q301 : DTC124ES
Q303,304 : 2SC2458
Q305,306 : DTC124EK
T.P (L)
T.P (R)
P.C. BOARD (A)
P.C. BOARD (B)
S2 : FWD/REV ESH1003
S01 SOLENOID EXP1010
S1 : MUTE ESN1005
S3 : TAPE/TUN ESH1004
S4 : MUTE CSN1005
M1 MOTOR UNIT EXA1162
HD1 HEAD UNIT EXA1163
-75dBs
FL
RL
FR
RR
• LCD
SEGMENT
COMMON
LOUD
LOC
SEEK
MS
MTL
CH
COM1
COM2

Fig. 7

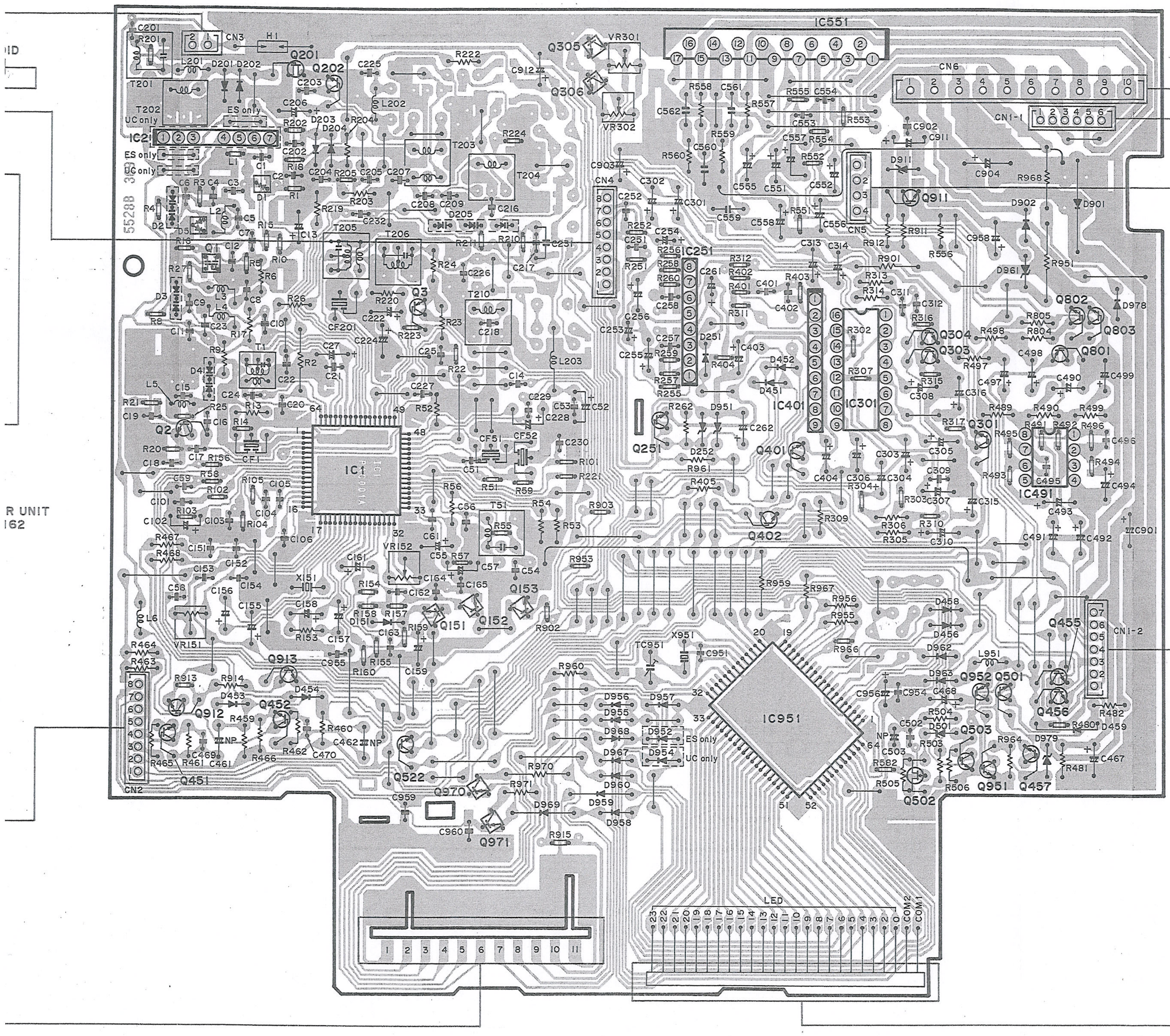
9. CONNECTION DIAGRAM (KEH-6969)

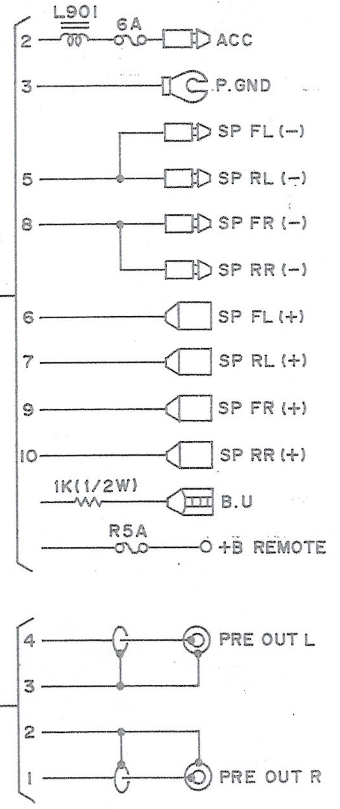

TUNER AMP P.C. BOARD
IC,Q
ADJ
ANT
P.C. BOARD (A)
S01 SOLENOID
S0
CN4
S2
D1
P.C. BOARD (B)
S3
S4
MUTE SWITCH
M1
MOTOR UNIT
ENA1162
S1
MUTE SWITCH
FL
RL
FR
RR
HD1
BT/VOLUME P.C. BOARD
5530A 3710
TUNE
S451
TREBLE
VR451-4
VR451-3
VR451-2
BASS
VR451-1
CN2
KEY BOARD UNIT
PL901
PL902
LOC
M1/H
M2/M
M3
CLOCK
M4/MS
M5/MTL
M6/DOLBY
P.SCAN/BSM
BAND
SEEK
L1
L2
IC1
IC2
IC251
IC301
IC401
IC491
IC551
IC951
CN1-1
CN1-2
CN3
CN5
CN6
VR151
VR152
VR301
VR302
TC951
X151
X951
LED
COM1
COM2
ES only
UC only
5528B

TUNER AMP P.C. BOARD

IC2 Q1 Q201 Q202 Q3 IC251 IC551 Q911
Q2 IC1 Q151 Q152 Q153 Q251 IC251 Q402 Q401 IC401 IC301 Q303 Q304 Q301 IC491 Q801 Q802 Q803
IC,Q Q451 Q912 Q913 Q452 Q522 Q970 Q971 IC951 Q502 Q503 Q952 Q951 Q501 Q457 Q456 Q455

ADJ T201 T202 T205 T206 T203 T204 VR301 VR302
L5 L2 L3 L4 T1 VR152 T51
VR151 TC951


ID
R UNIT
162
IC551
CN6
CN1-1
CN4
CN5
CN1-2
CN2
CN3
IC1
IC2
IC251
IC301
IC401
IC491
IC951
5528B 3800
ES only
UC only
LED
A
B
C
D

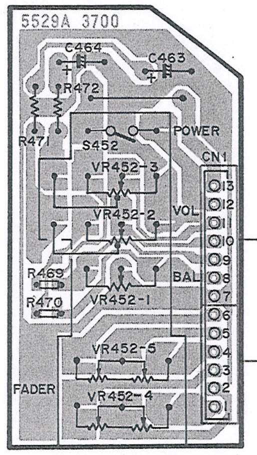

L901
6A
2 ACC
3 P.GND
SP FL (−)
5 SP RL (−)
8 SP FR (−)
SP RR (−)
6 SP FL (+)
7 SP RL (+)
9 SP FR (+)
10 SP RR (+)
1K(1/2W)
B.U
R5A
+B REMOTE
4 PRE OUT L
3
2
1 PRE OUT R

TUNER AMP P.C. BOARD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
IC251	1.3	0.8	1.8	–	0	1.8	0.8	1.3									
IC301	4	8	4	4	–	4.2	0.4	4.1	4.1	0.4	4.2	8	1.2	4	0	4	
IC401	0.9	0.9	–	–	0	–	–	–	–								
IC491	5	5	4.9	0	4.9	5	5	9.3									
IC551	5.1	5	5.6	5.2	0	5.1	5	5.1	14.5	14.5	6	6.1	0	0	15	6	14.5

(V)

FADER VOLUME P.C. BOARD


5529A 3700
C464
C463
R472
R471
S452
POWER
CN1
VR452-3
VR452-2
VOL
R469
R470
VR452-1
BAL
VR452-5
FADER
VR452-4

LCD: CAW1116

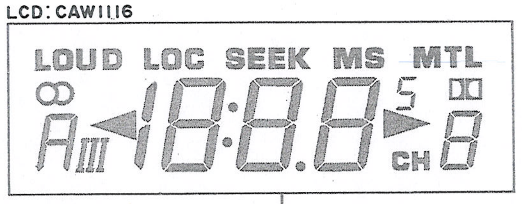
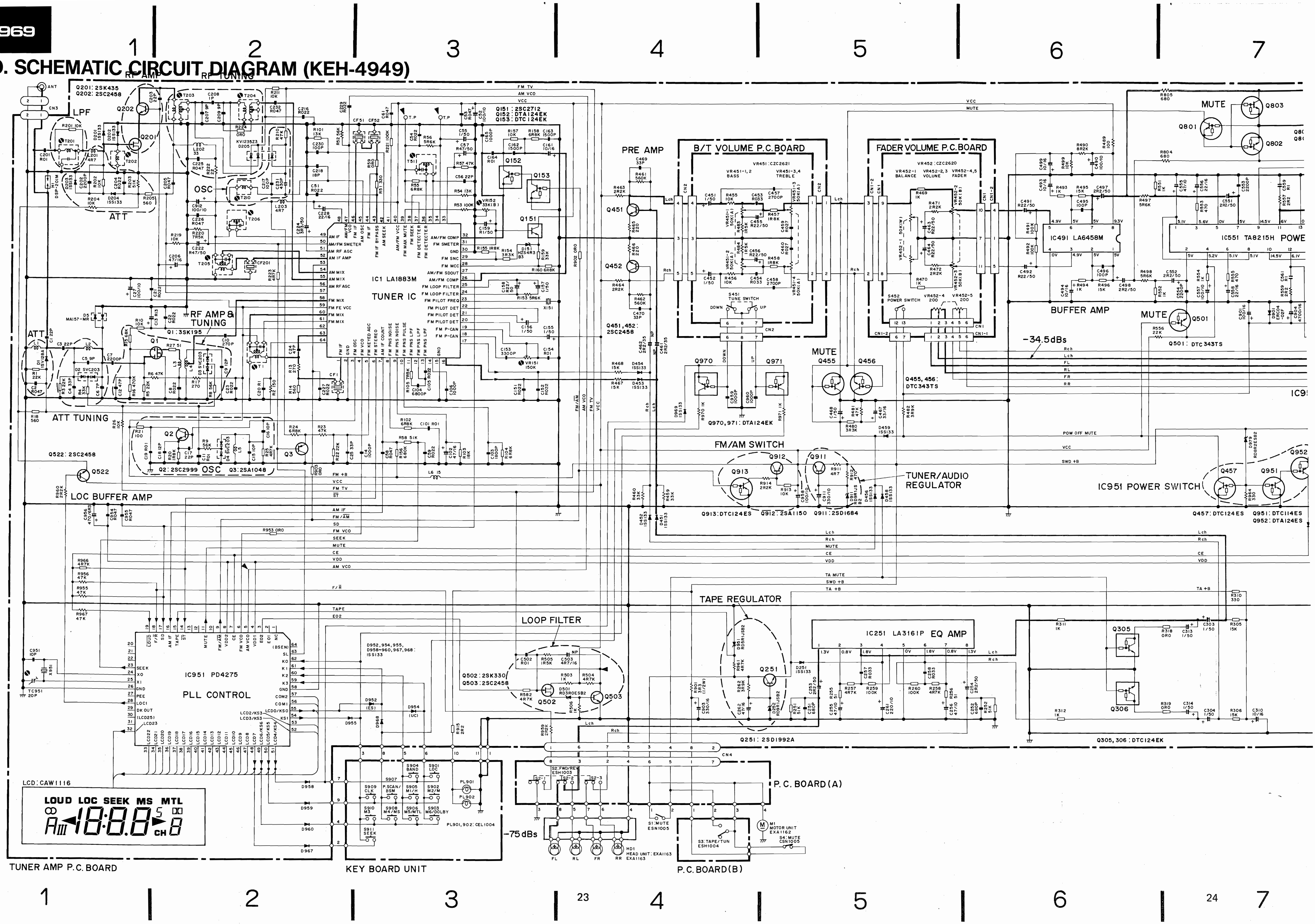

LOUD LOC SEEK MS MTL
CH

Fig. 8

10. SCHEMATIC CIRCUIT DIAGRAM (KEH-4949)


1
2
3
4
5
6
7
A
B
C
D
ANT
CN3
LPF
RF AMP
RF TUNING
Q201: 2SK435
Q202: 2SC2458
ATT
OSC
RF AMP & TUNING
Q1: 3SK195
ATT TUNING
Q2: 2SC2999
Q3: 2SA1048
Q522: 2SC2458
LOC BUFFER AMP
IC1 LA1883M
TUNER IC
Q151: 2SC2712
Q152: DTA124EK
Q153: DTC124EK
IC951 PD4275
PLL CONTROL
LCD: CAW1116
LOUD LOC SEEK MS MTL
TUNER AMP P.C. BOARD
KEY BOARD UNIT
S904 BAND
S901 LOC
S909 CLK
S907 P.SCAN/BSM
S905 M1/H
S902 M2/M
S910 M3
S908 M4/MS
S906 M5/MTL
S903 M6/DOLBY
S911 SEEK
PL901
PL902
PL901, 902: CEL1004
LOOP FILTER
Q502: 2SK330
Q503: 2SC2458
-75 dBs
HD1 HEAD UNIT: EXA1163
PRE AMP
Q451, 452: 2SC2458
B/T VOLUME P.C. BOARD
VR451: CZC2621
VR451-1, 2 BASS
VR451-3, 4 TREBLE
S451 TUNE SWITCH
Q970, 971: DTA124EK
FADER VOLUME P.C. BOARD
VR452: CZC2620
VR452-1 BALANCE
VR452-2, 3 VOLUME
VR452-4, 5 FADER
S452 POWER SWITCH
MUTE
Q455, 456: DTC343TS
FM/AM SWITCH
TUNER/AUDIO REGULATOR
Q913: DTC124ES
Q912: 2SA1150
Q911: 2SD1684
TAPE REGULATOR
Q251: 2SD1992A
P.C. BOARD (A)
P.C. BOARD (B)
S1: MUTE ESN1005
S3: TAPE/TUN ESN1004
S4: MUTE CSN1005
M1 MOTOR UNIT EXA1162
IC251 LA3161P EQ AMP
IC491 LA6458M
BUFFER AMP
-34.5dBs
MUTE
Q501: DTC343TS
Q801
Q802
Q803
IC551 TA8215H POWE
IC951 POWER SWITCH
Q457: DTC124ES
Q951: DTC114ES
Q952: DTA124ES
Q305, 306: DTC124EK

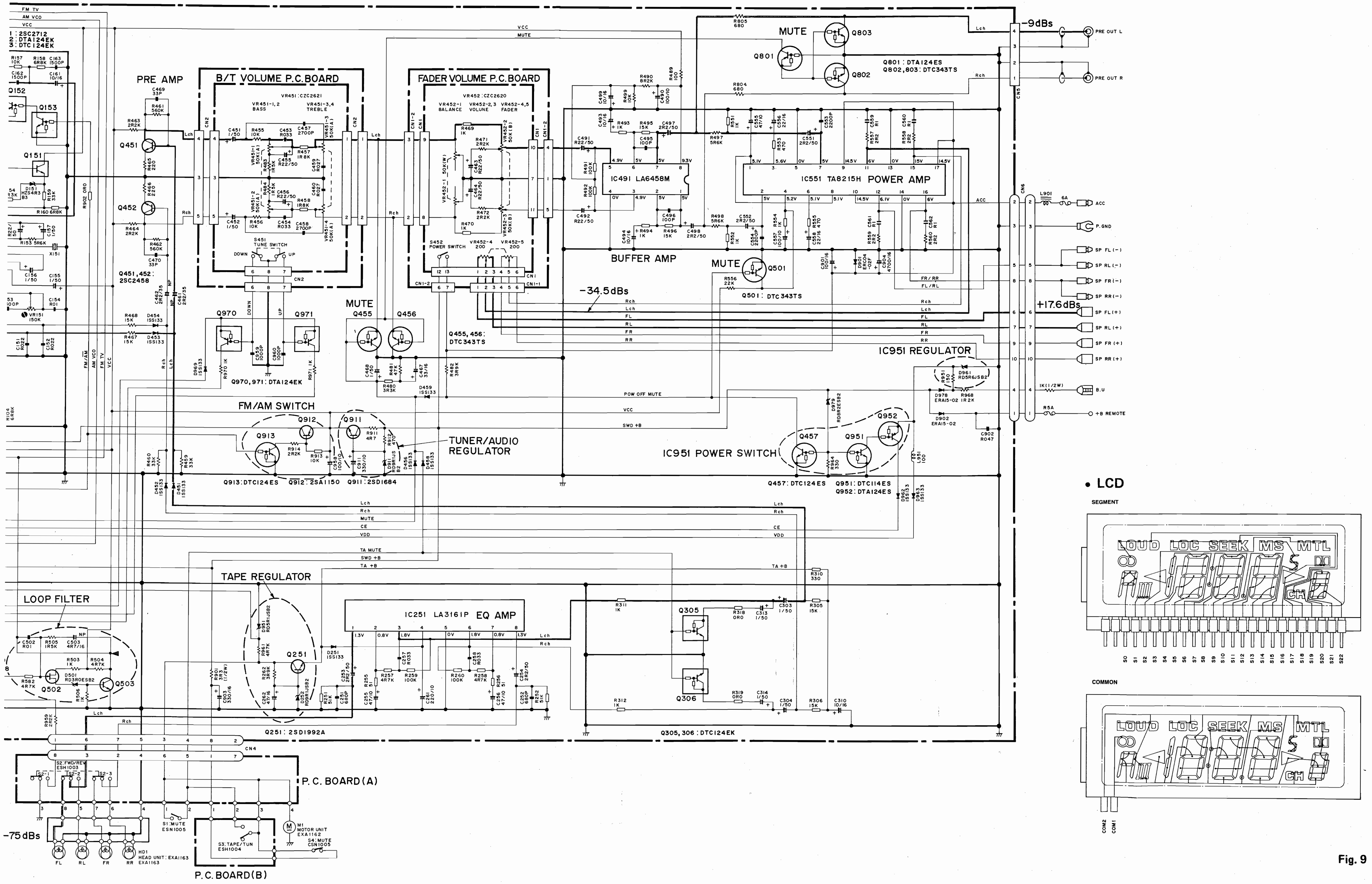
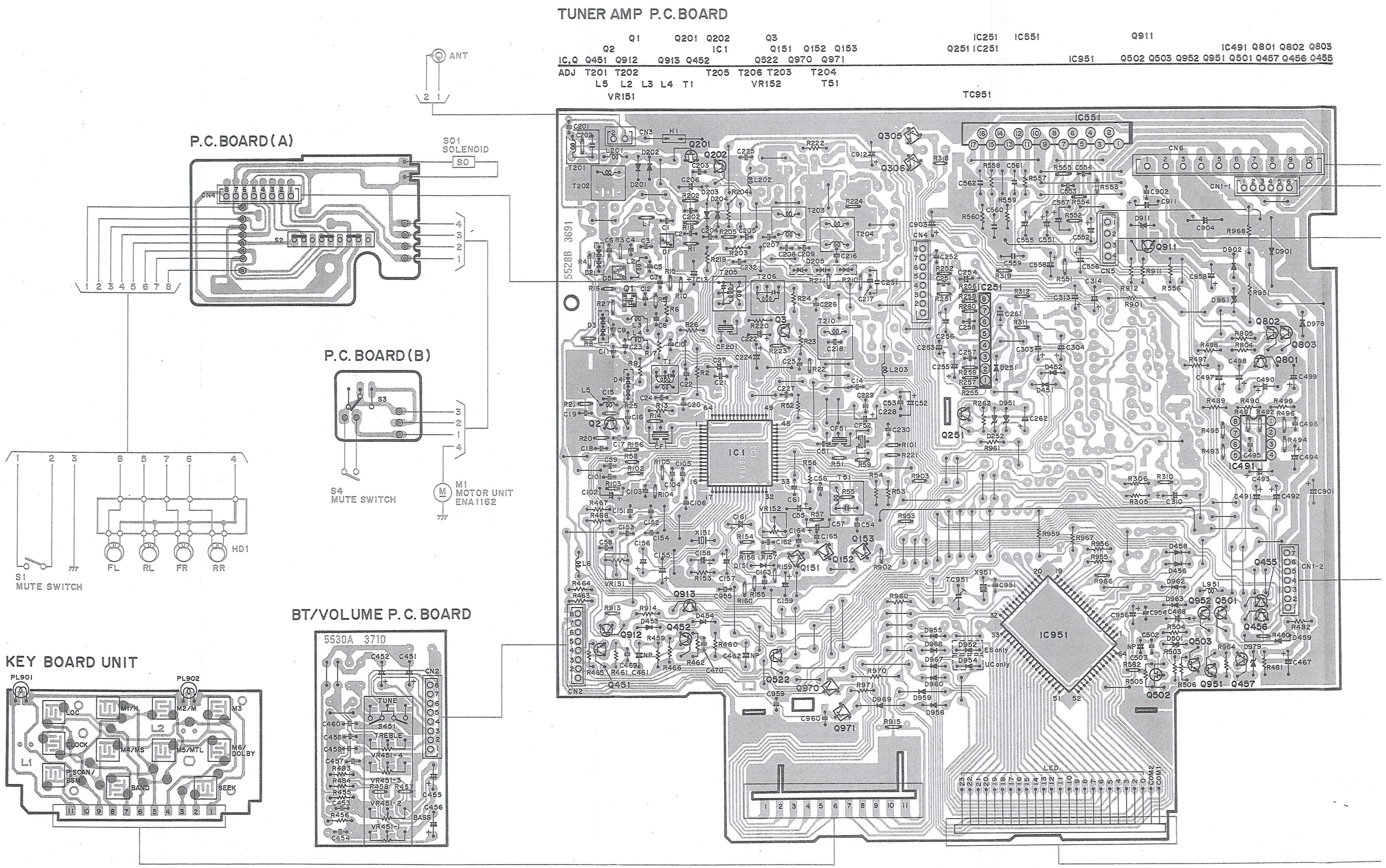
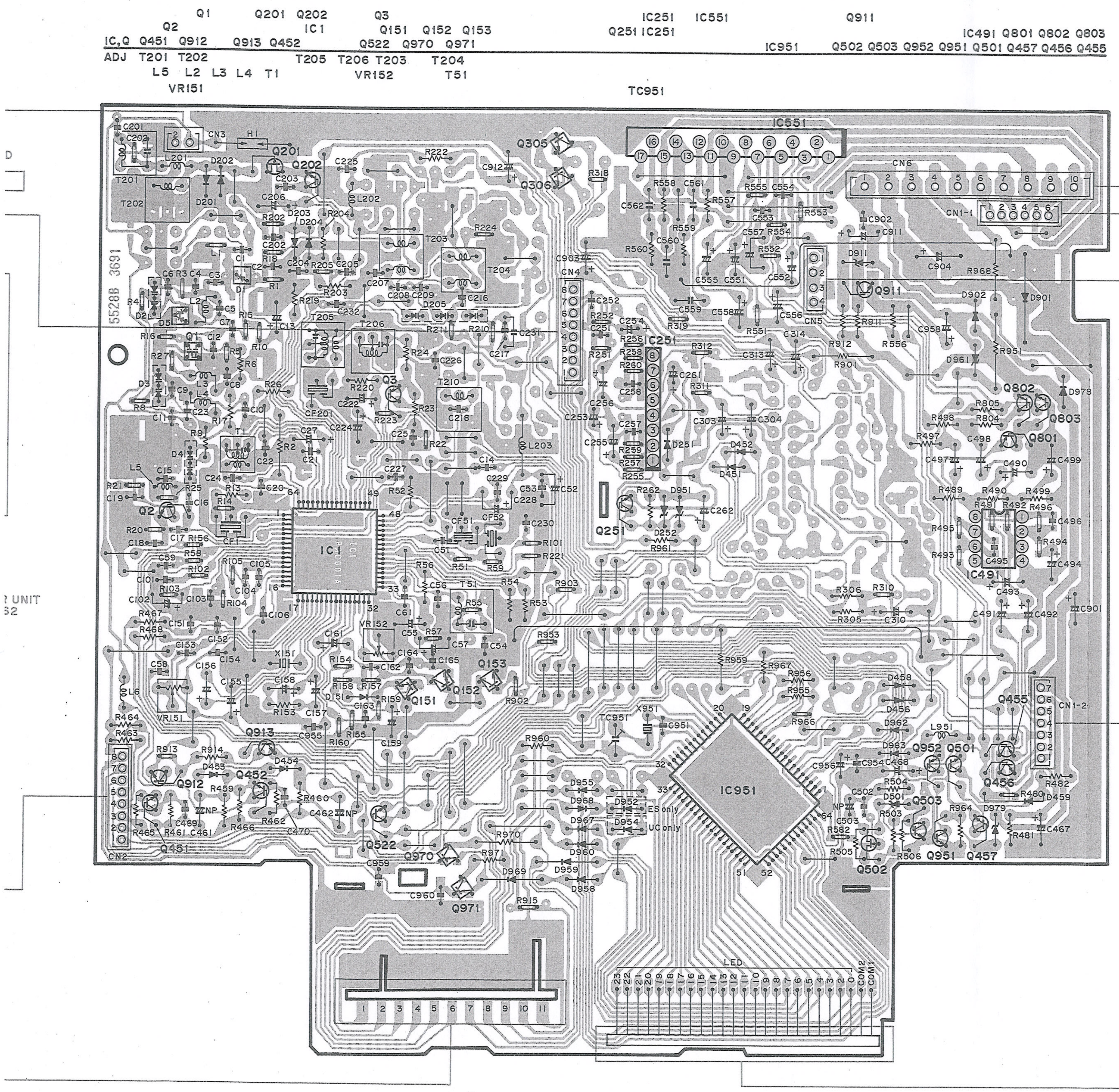

PRE AMP
B/T VOLUME P.C.BOARD
FADER VOLUME P.C.BOARD
VR451 : CZC2621
VR452 : CZC2620
BASS
TREBLE
BALANCE
VOLUME
FADER
S451 TUNE SWITCH
S452 POWER SWITCH
Q451,452 : 2SC2458
MUTE
Q455
Q456
Q455, 456 : DTC343TS
Q970
Q971
Q970, 971 : DTA124EK
FM/AM SWITCH
Q912
Q911
Q913
TUNER/AUDIO REGULATOR
Q913 : DTC124ES
Q912 : 2SA1150
Q911 : 2SD1684
IC491 LA6458M
BUFFER AMP
IC551 TA8215H POWER AMP
MUTE
Q501
Q501 : DTC343TS
MUTE
Q801
Q803
Q802
Q801 : DTA124ES
Q802,803 : DTC343TS
-9dBs
PRE OUT L
PRE OUT R
-34.5dBs
+17.6dBs
ACC
P.GND
SP FL (-)
SP RL (-)
SP FR (-)
SP RR (-)
SP FL (+)
SP RL (+)
SP FR (+)
SP RR (+)
B.U
+B REMOTE
IC951 REGULATOR
IC951 POWER SWITCH
Q457
Q951
Q952
Q457 : DTC124ES
Q951 : DTC114ES
Q952 : DTA124ES
TAPE REGULATOR
Q251
Q251 : 2SD1992A
IC251 LA3161P EQ AMP
Q305
Q306
Q305, 306 : DTC124EK
LOOP FILTER
Q502
Q503
D501 RD3R0ESB2
1 : 2SC2712
2 : DTA124EK
3 : DTC124EK
Q152
Q153
Q151
P. C. BOARD (A)
P.C.BOARD (B)
S2 : FWD/REV ESH1003
S1 : MUTE ESN1005
S3 : TAPE/TUN ESH1004
S4 : MUTE CSN1005
M1 MOTOR UNIT EXA1162
HD1 HEAD UNIT : EXA1163
-75dBs
FL
RL
FR
RR
• LCD
SEGMENT
COMMON
LOUD
LOC
SEEK
MS
MTL
CH
COM2
COM1

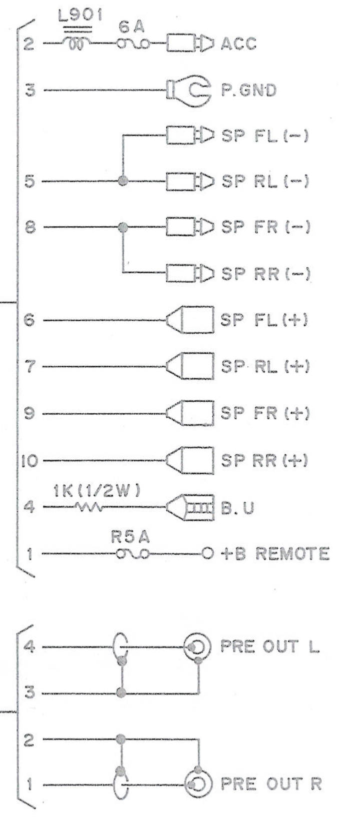
Fig. 9

11. CONNECTION DIAGRAM (KEH-4949)


TUNER AMP P.C.BOARD
IC,Q
ADJ
Q1 Q2 Q451 Q912 Q913 Q452 Q201 Q202 IC1 Q3 Q151 Q152 Q153 Q522 Q970 Q971
T201 T202 T205 T206 T203 T204
L5 L2 L3 L4 T1 VR152 T51
VR151
IC251 Q251 IC251 TC951 IC551 IC951
Q911 Q502 Q503 Q952 Q951 Q501 Q457 Q456 Q455
IC491 Q801 Q802 Q803
ANT
5528B 3691
IC1
IC951
IC551
CN6
CN1-1
CN1-2
CN2
CN3
CN4
CN5
LED
COM1
COM2
ES only
UC only
P.C.BOARD (A)
S01 SOLENOID
SO
CN4
S2
P.C.BOARD (B)
S3
S4 MUTE SWITCH
M1 MOTOR UNIT ENA1162
HD1
FL
RL
FR
RR
S1 MUTE SWITCH
BT/VOLUME P.C.BOARD
5530A 3710
TUNE
S451
TREBLE
VR451-4
VR451-3
VR451-2
VR451-1
BASS
KEY BOARD UNIT
PL901
PL902
LOC
M1/H
M2/M
M3
CLOCK
M4/MS
M5/MTL
M6/DOLBY
P.SCAN/BSM
BAND
SEEK
L1
L2
1
2
3
4
5
6
A
B
C
D

TUNER AMP P.C.BOARD


Q1
Q201 Q202
Q3
Q2
IC1
Q151 Q152 Q153
IC,Q Q451 Q912 Q913 Q452
Q522 Q970 Q971
ADJ T201 T202
T205 T206 T203 T204
L5 L2 L3 L4 T1
VR152 T51
VR151
IC251 IC551
Q251 IC251
TC951
IC951
Q911
Q502 Q503 Q952 Q951 Q501 Q457 Q456 Q455
IC491 Q801 Q802 Q803
5528B 3691
IC551
CN6
CN1-1
CN4
CN5
CN1-2
CN2
IC1
IC951
IC491
LED
ES only
UC only
COM2
COM1

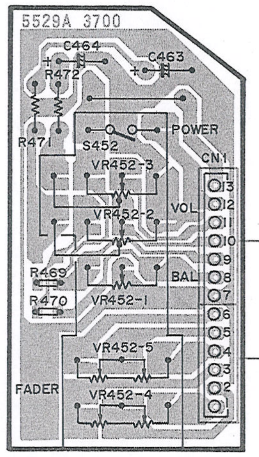

L901
6A
2 ACC
3 P.GND
SP FL (−)
5 SP RL (−)
8 SP FR (−)
SP RR (−)
6 SP FL (+)
7 SP RL (+)
9 SP FR (+)
10 SP RR (+)
1K (1/2W)
4 B.U
R5A
1 +B REMOTE
4 PRE OUT L
3
2
1 PRE OUT R

TUNER AMP P.C.BOARD

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
IC251	1.3	0.8	1.8	—	0	1.8	0.8	1.3									
IC491	5	5	4.9	0	4.9	5	5	9.3									
IC551	5.1	5	5.6	5.2	0	5.1	5	5.1	14.5	14.5	6	6.1	0	0	15	6	14.5

(V)

FADER VOLUME P.C.BOARD


5529A 3700
C464
C463
R472
R471
POWER
S452
VR452-3
CN1
VR452-2
VOL
R469
BAL
R470
VR452-1
VR452-5
FADER
VR452-4

LCD: CAW1116

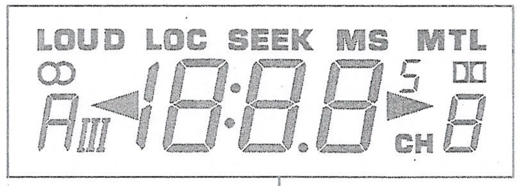
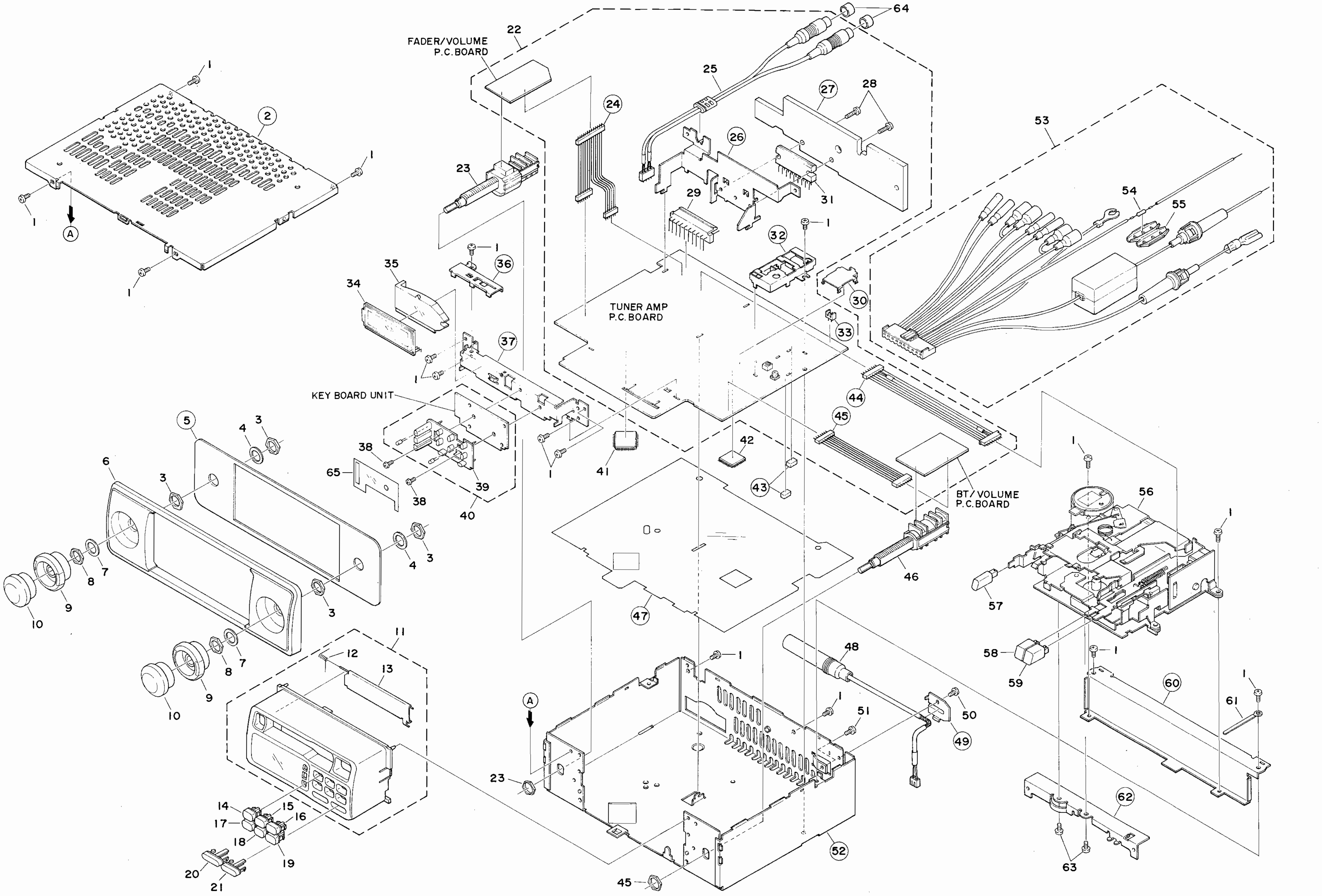

LOUD LOC SEEK MS MTL
CH

Fig. 10

12. CHASSIS EXPLODED VIEW


A
B
C
D
A
B
C
D
FADER/VOLUME P.C.BOARD
TUNER AMP P.C.BOARD
KEY BOARD UNIT
BT/VOLUME P.C.BOARD
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Ⓐ
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②
3
4
⑤
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(62)
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Fig. 11

NOTE:

- *The parts mark*
  subject to refus
- *Because the pa*
  not spare parts,

- **Parts List**

Mark	No.	Descri
	1	Screw
	2	Case
	3	Nut
	4	Washe
	5	Plate
		Panel
		Panel
		ES)
	7	Space
	8	Nut
	9	Knob
	10	Knob
	11	Grille
		Grille
	12	Spring
	13	Door
	14	Butto
	15	Butto
	16	Butto
	17	Butto
	18	Butto
	19	Butto
	20	Butto
	21	Butto
◉	22	Tuner
		Tuner
		Tuner
		Tuner
	23	Volur
	24	Conn
	25	Conn
	26	Brack
	27	Heat
	28	Screw
	29	Plug
	30	Shielc
	31	IC
	32	Case
	33	Plug
	34	LCD
	35	Lens
	36	Brack
	37	Brack
	38	Screw
	39	Rubb

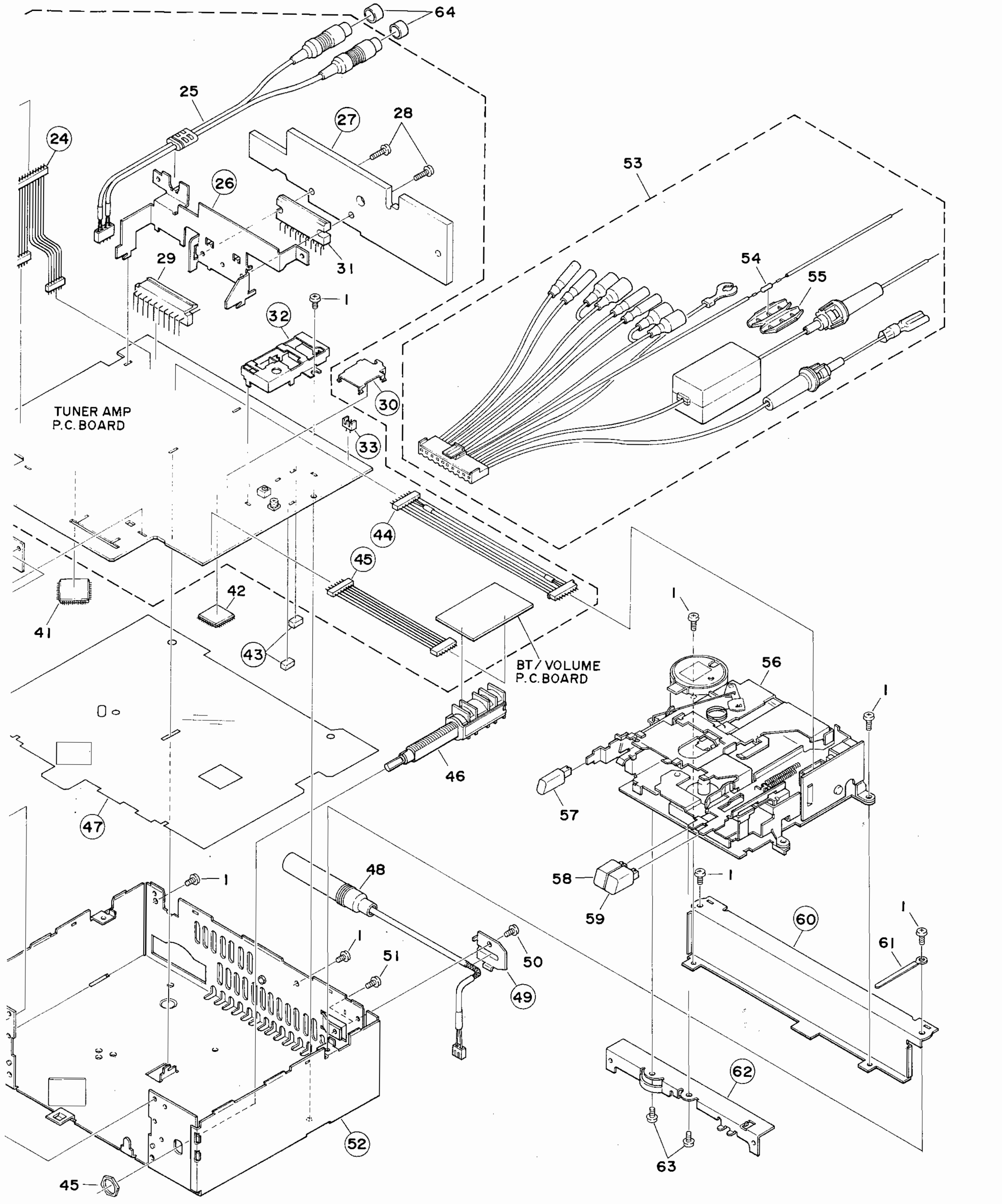


Fig. 11

NOTE:

- *The parts marked with "◉" may need long time to supply and their supply is subject to refuse as the case may be.*
- *Because the parts with encircled number shown on the dismantling drawing are not spare parts, we are unable to supply them in principle.*

- **Parts List**

Mark	No.	Description	Part No.
	1	Screw	BMZ26P050FMC
	2	Case	CZN5532
	3	Nut	CBN-028
	4	Washer	CND-646
	5	Plate	CNC3445
		Panel (KEH-6969/UC)	CNC2362
		Panel (KEH-6969/ES, KEH-4949/UC, ES)	CNC2363
	7	Spacer	CNC1528
	8	Nut	CBN1001
	9	Knob	CAA1280
	10	Knob	CAA1281
	11	Grille Unit (KEH-6969/UC, ES)	CXA4499
		Grille Unit (KEH-4949/UC, ES)	CXA4501
	12	Spring	CBH1396
	13	Door	CAT1427
	14	Button (1)	CAC2658
	15	Button (2)	CAC2659
	16	Button (3)	CAC2660
	17	Button (4)	CAC2661
	18	Button (5)	CAC2662
	19	Button (6)	CAC2663
	20	Button (BAND)	CAC2904
	21	Button (SEEK)	CAC2905
◉	22	Tuner Amp Unit (KEH-6969/UC)	CZW2935
		Tuner Amp Unit (KEH-6969/ES)	CZW2936
		Tuner Amp Unit (KEH-4949/UC)	CZW2937
		Tuner Amp Unit (KEH-4949/ES)	CZW2938
	23	Volume	CZC2620
	24	Connector (13P)	CZD2948
	25	Connector (PRE OUT)	CDE3552
	26	Bracket	CZN5524
	27	Heat Sink	CZN5525
	28	Screw	BMZ30P120FMC
	29	Plug	CKS-467
	30	Shield	CNC3275
	31	IC	TA8215H
	32	Case	CNC3276
	33	Plug	CKS1222
	34	LCD	CAW1116
	35	Lens	CNV2602
	36	Bracket	CNC3415
	37	Bracket	CNC3729
	38	Screw	CBA1176
	39	Rubber	CNV2601
◉	40	Key Board Unit	CWS1227
	41	IC	PD4275
	42	IC	LA1883M
	43	Cushion Rubber	CZN5537
	44	Connector (8P)	CDE3013
	45	Connector (8P)	CDE3012
	46	Volume	CZC2621
	47	Insulator	CZN5523
	48	Antenna Cable	CDH1115
	49	Holder	CNC2913
	50	Screw	BMZ30P050FMC
	51	Screw	BMC30P080FMC
	52	Chassis	CZN5522
	53	Cord Assy	CDE3167
	54	Resistor	RS1/2P102JL
	55	Cap	CNS1472
◉	56	Cassette Mechanism Assy (KEH-6969/UC, ES)	EXK1720
		Cassette Mechanism Assy (KEH-4949/UC, ES)	EXK1700
	57	Button (EJ)	CAC2669
	58	Button (REW)	CAC2667
	59	Button (FF)	CAC2666
	60	Bracket	CNC3417
	61	Clamper	CEF-007
	62	Bracket	CNC3416
	63	Screw	BSZ26P060FMC
	64	Cap	CNW-829
	65	Sheet	CNM3059

13. CASSETTE MECHANISM ASSY EXPLODED VIEW (KEH-6969)

- Parts List

Mark	No.	Description	Part No.
	1	Reel Unit	EXA1204
	2	Gear Unit	EXA1200
	3	Washer	CBF1037
	4	Gear	ENV1230
	5	Gear	ENV1203
	6	Gear	ENV1204
	7	Gear	ENV1273
	8	Gear	ENV1211
	9	Sub Chassis Unit	EXA1197
	10	Arm	ENV1210
	11	Screw	BMZ20P025FMC
	12	Spring	EBH1366
	13	·····	
	14	·····	
	15	Shaft	ELA1266
	16	Lever	ENC1269
	17	Washer	EBF1015
	18	Gear	ENV1208
	19	Spring	EBH1361
	20	Spring	EBH1362
	21	Lever	ENC1255
	22	Spring	EBH1359
	23	Washer	YE25FUC
	24	Spring	EBH1358
	25	·····	
	26	Lever	ENC1256
	27	Spring	EBH1373
	28	Arm	ENC1248
	29	Spring	EBH1308
	30	Washer	YE15FUC
	31	Arm Unit	EXA1198
	32	Spring	EBH1374
	33	Frame	ENC1204
	34	Arm	ENC1263
	35	·····	
	36	Holder	ENC1257
	37	Spring	EBH1364
	38	Lever	ENV1222
	39	Head Base Unit	EXA1203
	40	Tube	
	41	Spring	EBH1363
	42	Motor Unit	EXA1162
	43	Screw	PMS26P025FUC
	44	Screw	CBA1054
	45	Gathering P.C.Board	ENX1005
	46	Switch	ESH1004
	47	Switch	CSN1005
	48	Screw	CBA1025
	49	Gear	ENV1229
	50	Washer	CBF1038
	51	Belt	ENT1020
	52	Gear	ENV1209
	53	Arm Unit	EXA1155
	54	Washer	YE30FUC
	55	Spring	EBH1310
	56	Flywheel Unit	EXA1161
	57	Belt	ENT1018
	58	Arm	ENV1206
	59	Spring	EBH1317
	60	Gear	ENV1205
	61	Chassis Unit	EXA1196
	62	Screw	JFZ20P025FNI
	63	Bracket	ENC1250
	64	Pulley	ENV1207
	65	Solenoid	EXP1010
	66	Screw	EBA1023
	67	Plug	CKS1055
	68	Gathering P.C.Board	ENX1004
	69	Switch	ESH1003
	70	Washer	WH23FMC
	71	Screw	BSZ23P040FMC
	72	Screw	CBA1015
	73	Head Unit	EXA1163
	74	P.C.Board	ENP1042
	75	Switch	ESN1005
	76	Washer	YE20FUC
	77	Pinch Roller Unit	EXA1194
	78	Washer	YE12FUC
	79	Roller	ELA1247
	80	Arm Unit	EXA1166
	81	Screw	CBA1038
	82	Arm	ENV1227
	83	Spring	EBH1368
	84	Arm	ENC1266
	85	Spring	EBH1322
	86	Lever	ENC1228
	87	Spring	EBH1365
	88	Lever	ENC1229
	89	Arm Unit	EXA1158
	90	Pinch Roller Unit	EXA1193
	91	Spring	EBH1375
	92	Arm Unit	EXA1157
	93	Spring	EBH1345
	94	Collar	ELA1267

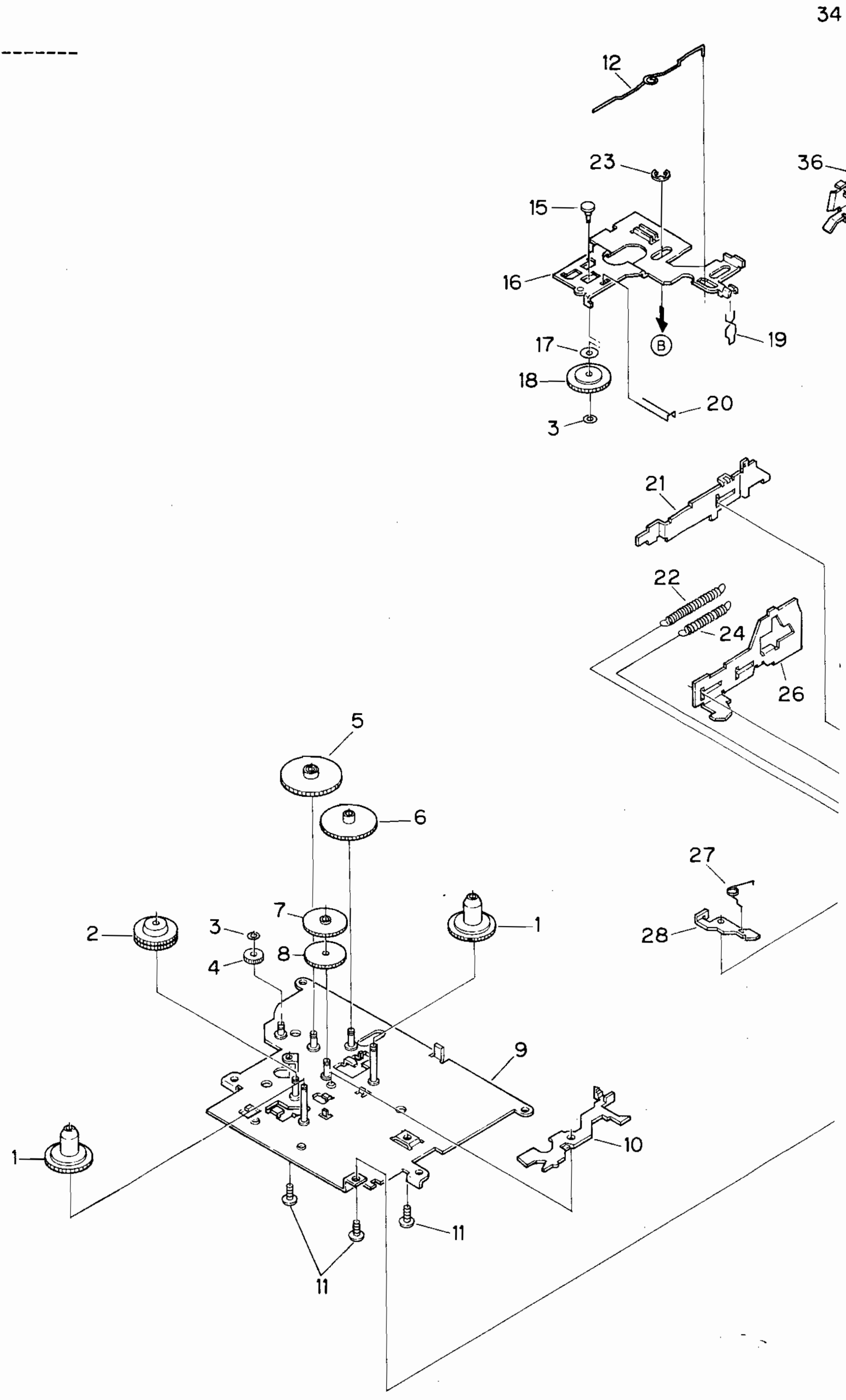
- **Cassette Mechanism Assy**

A

B

C

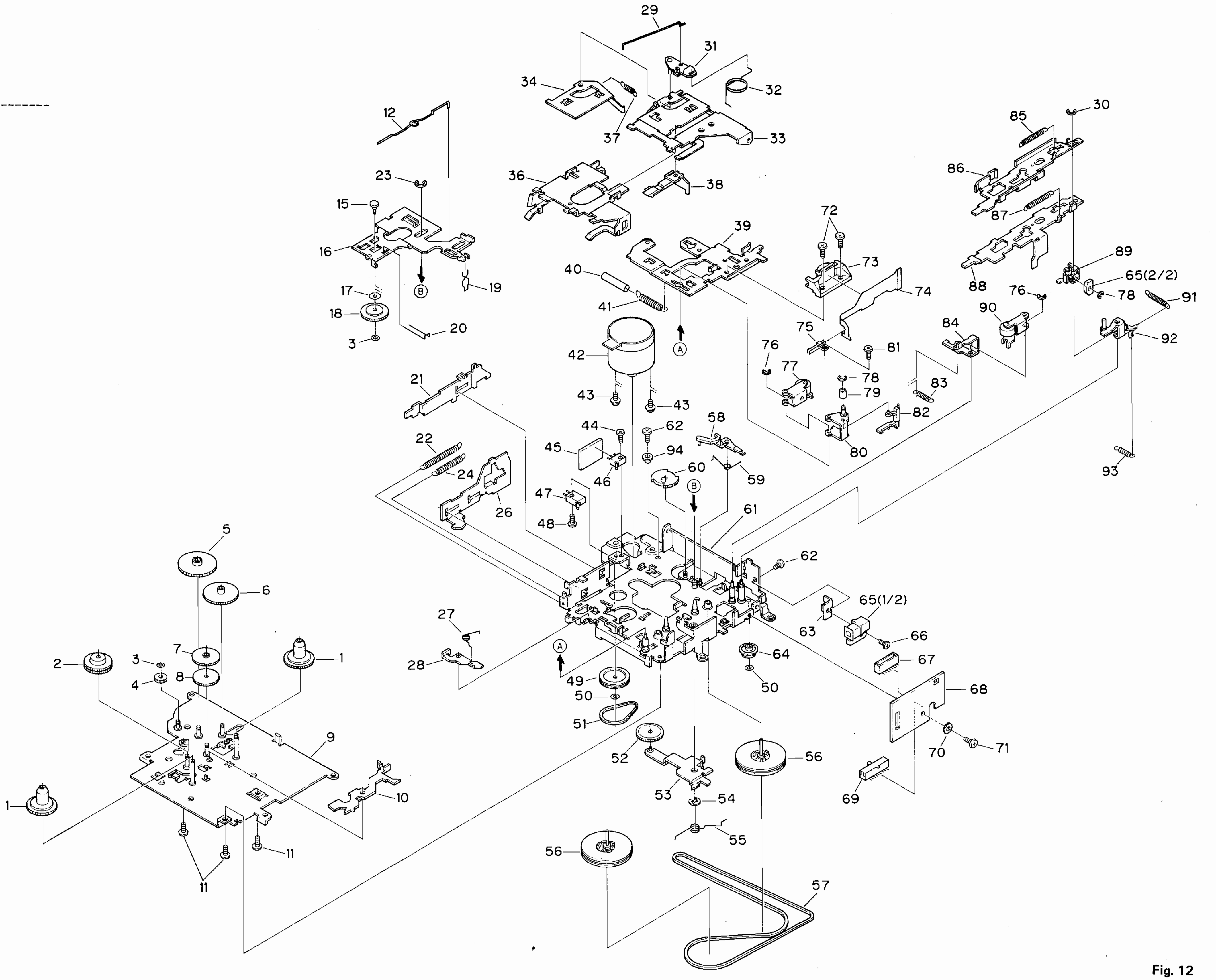
D



- **Cassette Mechanism Assy**

-6969)

Mark	No.	Description	Part No.
	81	Screw	CBA1038
	82	Arm	ENV1227
	83	Spring	EBH1368
	84	Arm	ENC1266
	85	Spring	EBH1322
	86	Lever	ENC1228
	87	Spring	EBH1365
	88	Lever	ENC1229
	89	Arm Unit	EXA1158
	90	Pinch Roller Unit	EXA1193
	91	Spring	EBH1375
	92	Arm Unit	EXA1157
	93	Spring	EBH1345
	94	Collar	ELA1267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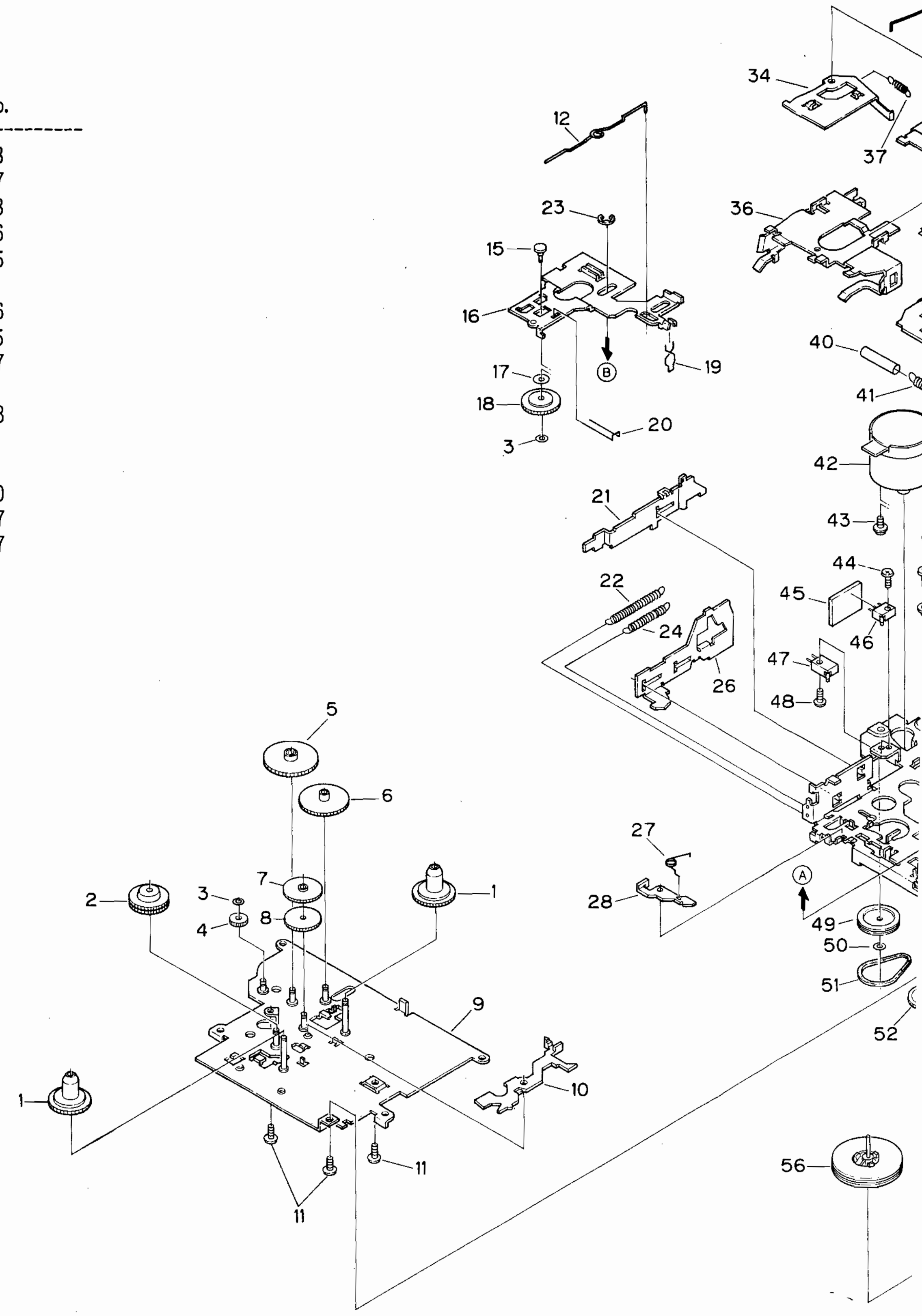
B
A

Fig. 12

14. CASSETTE MECHANISM ASSY EXPLODED VIEW (KEH-4949)

- Parts List

Mark	No.	Description	Part No.
	1	Reel Unit	EXA1104
	2	Gear Unit	EXA1200
	3	Washer	CBF1037
	4	Gear	ENV1230
	5	Gear	ENV1203
	6	Gear	ENV1204
	7	Gear	ENV1273
	8	Gear	ENV1211
	9	Sub Chassis Unit	EXA1197
	10	Arm	ENV1210
	11	Screw	BMZ20P025FMC
	12	Spring	EBH1366
	13	·····	
	14	·····	
	15	Shaft	ELA1266
	16	Lever	ENC1269
	17	Washer	EBF1015
	18	Gear	ENV1208
	19	Spring	EBH1361
	20	Spring	EBH1362
	21	Lever	ENC1255
	22	Spring	EBH1359
	23	Washer	YE25FUC
	24	Spring	EBH1358
	25	·····	
	26	Lever	ENC1256
	27	Spring	EBH1373
	28	Arm	ENC1248
	29	Spring	EBH1308
	30	Washer	YE15FUC
	31	Arm Unit	EXA1198
	32	Spring	EBH1374
	33	Frame	ENC1204
	34	Arm	ENC1263
	35	·····	
	36	Holder	ENC1257
	37	Spring	EBH1364
	38	Lever	ENV1222
	39	Head Base Unit	EXA1203
	40	Tube	
	41	Spring	EBH1363
	42	Motor Unit	EXA1162
	43	Screw	PMS26P025FUC
	44	Screw	CBA1054
	45	Gathering P.C.Board	ENX1005
	46	Switch	ESH1004
	47	Switch	CSN1005
	48	Screw	CBA1025
	49	Gear	ENV1229
	50	Washer	CBF1038
	51	Belt	ENT1020
	52	Gear	ENV1209
	53	Arm Unit	EXA1155
	54	Washer	YE30FUC
	55	Spring	EBH1310
	56	Flywheel Unit	EXA1161
	57	Belt	ENT1018
	58	Arm	ENV1206
	59	Spring	EBH1317
	60	Gear	ENV1205
	61	Chassis Unit	EXA1196
	62	Screw	JFZ20P025FNI
	63	·····	
	64	Pulley	ENV1207
	65	·····	
	66	·····	
	67	Plug	CKS1055
	68	Gathering P.C.Board	ENX1004
	69	Switch	ESH1003
	70	Washer	WH23FMC
	71	Screw	BSZ23P040FMC
	72	Screw	CBA1015
	73	Head Unit	EXA1163
	74	P.C.Board	ENP1042
	75	Switch	ESN1005
	76	Washer	YE20FUC
	77	Pinch Roller Unit	EXA1194
	78	·····	
	79	·····	
	80	Arm	ENC1213
	81	Screw	CBA1038
	82	Arm	ENV1227
	83	Spring	EBH1368
	84	Arm	ENC1266
	85	Spring	EBH1365
	86	Lever	ENC1206
	87	Spring	EBH1365
	88	Lever	ENC1207
	89	·····	
	90	Pinch Roller Unit	EXA1193
	91	·····	
	92	Arm	ENC1270
	93	Spring	EBH1367
	94	Collar	ELA1267



49)

Mark	No.	Description	Part No.
	81	Screw	CBA1038
	82	Arm	ENV1227
	83	Spring	EBH1368
	84	Arm	ENC1266
	85	Spring	EBH1365
	86	Lever	ENC1206
	87	Spring	EBH1365
	88	Lever	ENC1207
	89	·····	
	90	Pinch Roller Unit	EXA1193
	91	·····	
	92	Arm	ENC1270
	93	Spring	EBH1367
	94	Collar	ELA1267

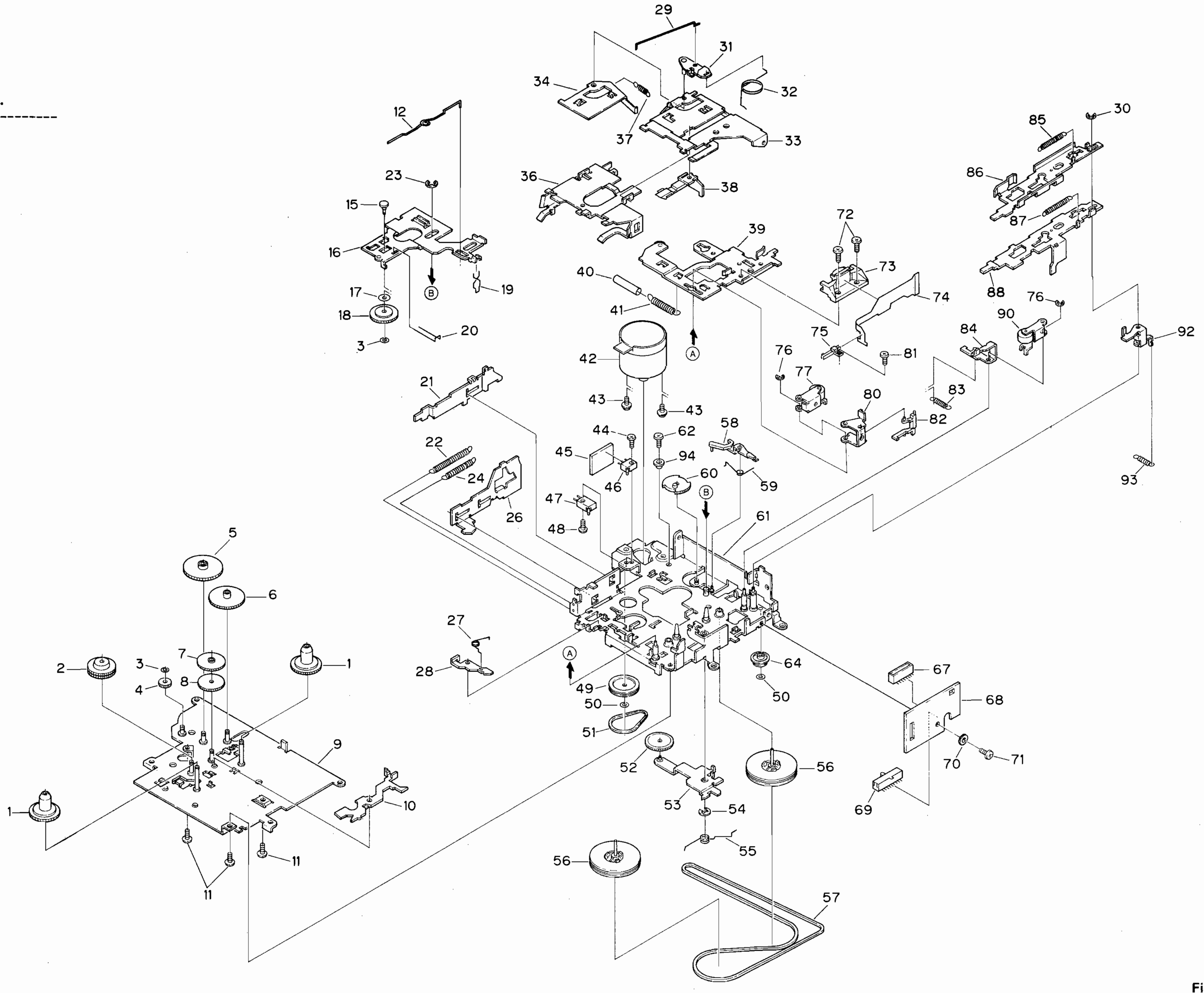

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Fig. 13

16. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor
RS1/8S □□□J, RS1/10S □□□J
Chip Capacitor (except for OQS......)
CKS....., CCS....., CSZS.....

Unit Number:
Unit Name: Tuner Amp Unit (KEH-6969/UC)

Tuner Amp Unit
Consists of
- Tuner Amp P. C. Board
- Fader Volume P. C. Board
- B/T Volume P. C. Board

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
IC	1		LA1883M
IC	2		CWW1116
IC	251		LA3161P
IC	301		CXA1102P
IC	401		AN6263N
IC	491		LA6458D
IC	551		TA7280P
IC	951		PD4275
Q	1	Chip Transistor	3SK195
Q	2		2SC2999
Q	3		2SA1309A
Q	151	Chip Transistor	2SC2412K
Q	152 970 971	Chip Transistor	DTA124EK
Q	153 305 306 914	Chip Transistor	DTC124EK
Q	201		2SK435
Q	202, 303 304 503 522		2SC1740S
Q	251		2SD1992A
Q	301 401 402 457 913		XDC124ES
Q	451 452		2SC2458
Q	455 456 501 802 803		DTC343TS
Q	502		2SK330
Q	911		2SD1684
Q	912		2SA1150
Q	951		XDC114ES
Q	952 801		DTA124ES
D	1	Chip Diode	1SV128A-BB
D	2 3 4	Variable Capacitance Diode	SVC203-AB
D	5	Chip Diode	MA157-MR
D	151		HZS4R3EB3
D	201 202 203 204 251 451 452 453 456		1SS133
D	205	Variable Capacitance Diode	KV1235Z3
D	252 911		HZS9R1JB2
D	458 459 954 955 956 957 958 960 963		1SS133
D	501		RD3R0ESB2
D	901		ERC04-02F
D	902 978		ERA15-02VH
D	951		RD5R1JSB2
D	961		RD5R6ESB2B2
D	967 968 969		1SS133
D	979		RD8R2JS

Mark	Circuit Symbol & No.	Part Name	Part No.
L	1	Inductor	CTF1065
L	2	Coil	CTC1022
L	3	Coil	CTC1020
L	4	Coil	CTC1056
L	5	OSC Coil	CTC1024
L	6	Inductor	LAU150K
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Ferri-Inductor	CTF-161
L	951	Ferri-Inductor	LAU101K
T	1	Coil	CTC1064
T	51	Coil	CTC1071
T	201	Coil	CTB1056
T	202	Coil	CTB1008
T	203 204	Coil	CTB1058
T	205	Coil	CTE1041
T	206	Coil	CTE1042
T	210	Coil	CTB1061
TC	951	Trimmer	CZC2622
CF	1	Ceramic Filter	CTF-182
CF	51 52	Ceramic Filter	CTF1130
CF	201	Filter	CTF1085
H	1		DSP-201M
X	151		CSS1066
X	951	Crystal Resonator	CSS1077
VR	151		CZC2624
VR	152 301 302		CZC2623
VR	451		CZC2621
VR	452		CZC2620
		LCD	CAW1116

RESISTORS

Mark	Circuit Symbol & No.	Part Name	Part No.
R	1 3 5		RS1/10S223J
R	2		RD1/4PS151JL
R	4 159		RS1/10S333J
R	6 481 955 956 967		RD1/4PS473JL
R	8		RS1/10S563J
R	9 52		RD1/4PS563JL
R	10 157 201 202 211 913		RS1/10S103J
R	13 17		RD1/4PS271JL
R	14 18		RS1/10S561J
R	15		RS1/10S683J
R	16		RS1/10S474J
R	20 155		RS1/10S182J
R	21		RS1/10S101J
R	22 495 496		RS1/10S153J
R	23 556		RD1/4PS223JL
R	24		RD1/4PS682JL
R	25 223 257 258 966		RS1/10S472J
R	26 204 219 405		RD1/4PS103JL
R	27 255 256		RS1/10S510J
R	51 310		RS1/10S331J
R	53		RD1/4PS104JL
R	54		RD1/4PS133JL
R	55 104 158		RS1/10S682J
R	56 153 497 498		RD1/4PS562JL
R	57 210 303 304 307		RS1/10S473J
R	58 251 252		RS1/10S513J
R	59 224 902 953		RS1/10S0R0J
R	101		RS1/10S133J
R	102 160		RS1/10S682J
R	103		RS1/10S183J
R	105		RS1/10S752J
R	154 480		RS1/10S332J
R	156		RS1/10S684J
R	203		RD1/4PS513JL
R	205		RS1/10S561J
R	220		RD1/4PS752JL
R	221 259 260 491 492		RS1/10S104J
R	222		RD1/4PS220JL
R	262 482		RD1/4PS392JL
R	302		RS1/10S433J
R	305 306 467 468		RD1/4PS153JL
R	309 504 961		RD1/4PS472JL
R	311 312		RD1/4PS272JL
R	313 314		RD1/4PS332JL
R	315 316		RS1/10S104J
R	317 469 470 493 494 551 552 554		RS1/10S102J
R	401 402		RS1/10S822J
R	403		RS1/10S684J
R	404		RS1/8S470J
R	455 456 499		RD1/4PS103JL
R	457 458		RS1/8S182J
R	459 460		RD1/4PS333JL
R	461 462		RD1/4PS564JL
R	465 466		RD1/4PS221JL
R	471 472 481 914 960		RD1/4PS222JL
R	483 484 505		RD1/4PS152JL
R	489		RD1/4PS101JL
R	490		RD1/4PS822JL
R	503 506 970 971		RD1/4PS102JL
R	553 555		RS1/10S471J
R	557 558 559 560		RD1/4PS2R2JL
R	582		RS1/8S472J
R	804 805		RD1/4PS681JL
R	901		RD1/2PS3R3JL
R	903		RS1/8S0R0J
R	915		RS1/8S2R2J
R	911		RD1/4PS4R7JL
R	912		RD1/4PS471JL
R	951		RS1P151JL
R	964		RD1/4PS331JL
R	968		RD1/4PS122JL
R	969		RD1/4PS102JL

CAPACITORS

Mark	Circuit Symbol & No.	Part Name	Part No.
C	1 3 17 56 203		CCSQCH220J50
C	2 53 58 205 225 226 232 902 954 955		CKSQYB473K25
C	4 25 402 469 470		CCSQCH330J50
C	5 207 209		CCSQTH090D50
C	6		CCSQTH070D50
C	7 202 553 554		CKSQYB222K50
C	8 22 51 54 59 105 204 216 227 229		CKSQYB223K50
C	9		CCSQTH120J50
C	10		CCSQSL271J50
C	11 19 101 154 164 201 401 502 961 962		CKSQYB103K50
C	12 24		CCSQCH470J50
C	13 224		CEA3R3M50LS
C	14 959 960		CKSQYB102K50
C	15 16		CCSQCH100D50
C	18		CCSQCH120J50
C	20		CKSQYF104Z50
C	21 23		CKSYB223K50
C	27 52 307 308 490 958		CEA101M10LS
C	55 155 156 157 313 314 451 452 468		CEA010M50LS2
C	57 222		CEAR47M50LS2
C	61 309		CKSYB473K50
C	102 206 262		CEA470M16LS
C	103		CKSQYB182K50
C	104		CKSQYB682K50
C	106 165		CKSQYB102K50
C	151 152 311 312		CKSQYB223K50
C	153		CKSQYB332K50
C	158 455 456 491 492 463 464		CEAR22M50LS2
C	159 404		CEA0R1M50LS2
C	161 310 315 316 493 494 499		CEA100M16LS2
C	162 163		CKSQYB152K50
C	208		CCSQCH010C50
C	217 230 495 496		CCSQRH101J50
C	218		CCSQUJ180J50
C	228 556 558		CEA220M16LS
C	231		CQPA431G2A
C	251 252		CCSQSL681J50
C	253 254		CEANL2R2M50LL
C	255 256		CEA470M10LS
C	257 258 453 454		CKSQYB333K50
C	261		CEA221M10L2
C	301 302 303 304		CEA4R7M35LS
C	305 306		CEAR68M50LS2
C	403		CEA330M10LS
C	457 458		CKSQYB822K50
C	459 460		CKSYB393K25
C	461 462		CEALNP2R2M35
C	467		CEA330M16LS
C	497 498 551 552		CEA2R2M50LS2
C	503	4.7μF/16V	CCH1005
C	555		CEHAQ470M10
C	557 912		CEHAQ101M10
C	559 560 561 562		CGCYX104M25

Mark	Circuit Symbol & No.	Part Name	Part No.
	C 901		CEA101M16L2
	C 903		CEHAQ331M16
	C 904		CEHAQ472M16
	C 911		CEHAQ331M10
	C 951		CCSQCH100D50
	C 956		CEA471M6R3L2

Tuner Amp Unit	KEH-6969/UC	KEH-6969/ES	KEH-4949/UC	KEH-4949/ES
Symbol & No.	Part No.	Part No.	Part No.	Part No.
IC2	CWW1116	------	------	------
D952	------	1SS133	------	1SS133
D954	1SS133	------	1SS133	------
R22	RS1/10S153J	RS1/10S223J	RS1/10S223J	RS1/10S223J
R23	RD1/4PS223JL	RD1/4PS472JL	RD1/4PS472JL	RD1/4PS472JL
R56	RD1/4PS562JL	RD1/4PS153JL	RD1/4PS562JL	RD1/4PS153JL
R311 312	------	------	RS1/10S102J	RS1/10S102J
R318 319	------	------	RS1/10S0R0J	RS1/10S0R0J
R467 468	RD1/4PS153JL	RD1/4PS103JL	RD1/4PS153JL	RD1/4PS103JL
C151 152	CKSQYB223K50	CKSQYB153K50	CKSQYB223K50	CKSQYBK50
C303 304	------	------	CEA010M50LS2	CEA010M50LS2
C313 314	------	------	CEA010M50LS2	CEA010M50LS2

Unit Number :
Unit Name : Key Board Unit

MISCELLANEOUS

Mark	Circuit Symbol & No.	Part Name	Part No.
	IL 901 902	Lamp 14V 40mA	CEL1004

Unit Number :
Unit Name : P. C. Board(A)

Mark	Circuit Symbol & No.	Part Name	Part No.
	D 1		ISR-35-100A
	S 2	Switch(FWD/REV)	ESH1003

Unit Number :
Unit Name : P. C. Board(B)

Mark	Circuit Symbol & No.	Part Name	Part No.
	S 3	Switch(TAPE/TUN)	ESH1004
	S 4	Switch(MUTE)	CSN1005

Miscellaneous Parts List

Mark	Circuit Symbol & No.	Part Name	Part No.
	S 1	Switch(MUTE)	ESN1005
	M 1	Motor Unit	EXA1162
	HD 1	Head Unit	EXA1163
	SO 1	Solenoid	EXP1008